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LAS CRUCES DISTRICT FINAL WILDERNESS ANALYSIS REPORTS

VOLUME 2



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BUREAU OF LAND MANAGEMENT
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LAS CRUCES/LORDSBURG
RESOURCE AREA

APPENDIX A

ADEN LAVA FLOW WSA (NM-030-053)

I. GENERAL DESCRIPTION

A. Location

The Aden Lava Flow Wilderness Study Area (WSA) is located in the southwest quarter of Dona Ana County, 21 miles southwest of Las Cruces, New Mexico, and 45 miles northwest of El Paso, Texas. The WSA lies northeast and east of the West Potrillo Mountains and Mount Riley WSAs.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Noria, Afton, Mount Riley, and Aden, New Mexico quadrangles. All of these maps are at the 15-minute scale.

B. Climate and Topography

The Aden Lava Flow WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is approximately 8 inches. A wide variation in annual totals is characteristic of arid climates as illustrated by annual extremes of 19.60 and 3.62 inches recorded at New Mexico State University in Las Cruces during a 74-year period of record. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is slightly above 90°F. In January, the coldest month, the average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west and may exceed 30 mph in the afternoons.

The majority of the WSA (about 77 percent) is comprised of the Aden Lava Flow. The lava flow is a nearly flat landform with average elevations ranging from 4,225 feet to 4,300 feet. The interior relief of the flow, however, is extremely varied. Steep-walled holes in the lava occur in varying shapes and sizes. The larger holes are 100 feet in diameter and 40-50 feet deep. Crevices up to 5 feet wide and 20-30 feet deep are numerous. Other ministructures within the flow include pressure ridges and lava tubes.

The Aden Crater and Afton volcanoes are the most prominent topographic features in the lava flow. Aden Crater, in the northwest part of the WSA, is nearly circular with an interior depression about one quarter

of a mile in diameter. The Afton volcanoes are a cluster of three resurgent volcanoes in the southeast part of the WSA.

The south-central part of the WSA outside of the lava flow is generally flat with rolling sand dunes.

C. Land Status

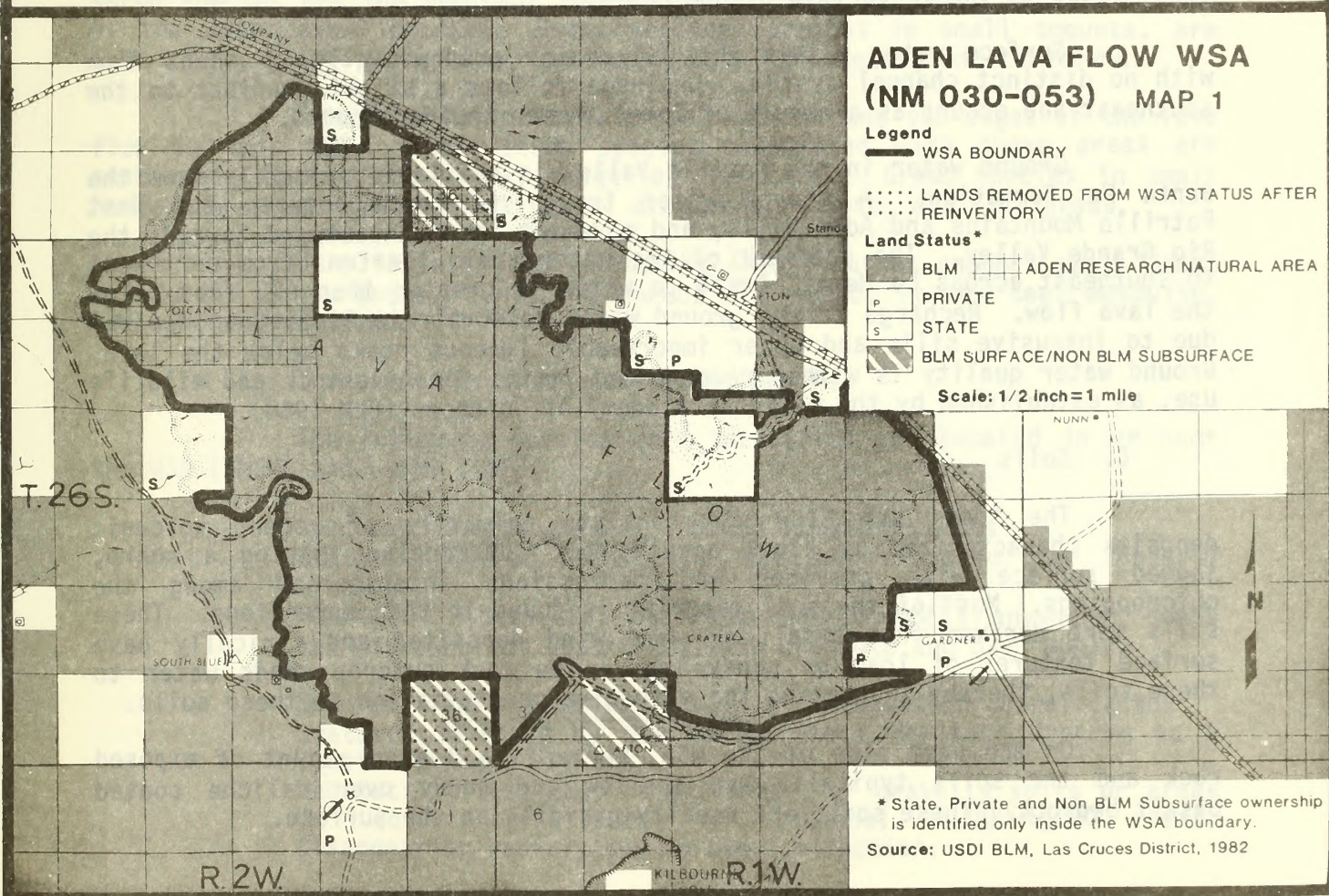
The WSA contains 23,857 acres of public land. There are no state or private inholdings; however, 640 acres of state land are cherry-stemmed in the east-central part of the WSA. (See Map 1 for land status.)

D. Access

The Aden Lava Flow WSA is legally accessible from County Roads B02 and A19, which form portions of the northeastern and eastern boundaries. Ranch roads along the northwestern, western, and southern boundaries all cross state and private lands for which there is no legal public access.



Looking west from the Aden Crater.



II. EXISTING RESOURCES

A. Geology

The Aden Lava Flow WSA is located within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake deposits.

Locally, the WSA lies within a major structural intermontane basin known as the Mesilla Bolson and is within the Rio Grande Rift system. Main features of the Mesilla Bolson are coppice sand dunes, wind-blown depressions, low relief volcanic craters, basalt flows, and cinder cones.

The Aden Lava Flow covers approximately 30 square miles and consists of thin vesicular basalt flows with associated shield, spatter, and explosion-collapse craters and depressions. The Aden Lava Flow was formed over 10,000 years ago as a result of volcanic eruption from Aden Crater. Aden Crater is a shield volcano. The Aden Lava Flow is underlain by Quaternary bolson fill and marine sediments of the Paleozoic and Mesozoic eras. These marine sediments are not exposed at the surface.

B. Water

The Aden Lava Flow WSA is situated within the highlands of the Mesilla Basin. Commonly referred to as La Mesa, the Mesilla Basin contributes to the larger Rio Grande Basin.

Surface water within the WSA drains predominantly as sheet flow with no distinct channel system. Drainage follows a slight gradient to the southeast and occurs as a result of local summer thundershowers.

Ground water in the Mesilla Valley is available primarily from the Santa Fe formation. A ground water trough is found between the West Potrillo Mountains and Aden Hills, and movement is southeastward towards the Rio Grande Valley. The gradient of the water table flattens from northwest to southeast across La Mesa. Depth to water is greater than 400 feet below the lava flow. Recharge to the ground water reservoir is limited in the WSA due to intrusive sills and other impermeable igneous rocks below the lava. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The Aden Lava Flow WSA consists primarily of recent volcanic deposits characterized by black basalt rock outcroppings having a sharp, jagged surface with crevices and depressions interspersed among the outcroppings. Most of the soil material is found in the depressions. These soils were derived from basalt or were wind deposited and typically have surface textures of loam or sandy loam. The rock outcrop sheds water to these soils, thereby increasing the effective precipitation to these soils.

On the east side of the WSA, there is a lesser amount of exposed rock and the soils typically are shallow and sandy over caliche coated basalt bedrock. These soils are usually gravelly on the surface.

D. Vegetation

1. General

The vegetation and associated range sites within the Aden Lava Flow WSA consist of four major types:

Vegetation Types	Range Sites	Federal Acres
Grass-mixed desert shrub	Malpais (lava flow)	18,373
Mesquite	Sandy	3,879
Creosote	Shallow sand	1,261
Grass-mixed desert shrub	Bottomland (swale)	344

Grass species (tobosa, vine-mesquite, dropseeds, bluestems, and black grama) occur in pockets of soil in the rough broken lava rock of the malpais (lava flow). Mixed desert shrub species such as creosote, snakeweed, Mormon tea, tarbush, and yucca occur where large amounts of soil have accumulated.

Mesquite, yucca, broom dalea, snakeweed, and pale wolfberry shrub species are the dominant vegetation on sandy areas on the south side of the Aden Lava Flow WSA. Grass species, present in small amounts, are bush muhly, black grama, other gramas, tobosa, dropseeds, and threeawns.

Creosote shallow sand areas occur around the edges of the lava flow in this WSA. Other shrub species associated with these areas are snakeweed, Mormon tea, yucca, mesquite, and cacti. Grass species in small numbers are bush muhly, black grama, dropseeds, tobosa, and fluffgrass.

Deep soils in the bottomland (swale) areas support small dense stands of tobosa grass. Invading shrubs are sumac, Mormon tea, mesquite, tarbush, and snakeweed.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

The Aden Lava Flow WSA is mainly a lava habitat site (77 percent). Small areas of other habitat sites found at the outer edges are mesquite sand dune, snakeweed, and creosote.

The Aden Lava Flow exhibits a number of valuable and interesting wildlife features. The edge of the flow is an ecotonal area which has an overlap of species from both the lava and the surrounding desert. There also may be species typical of the ecotone itself.

Vent tubes and the many crevices found in the lava provide escape cover and den sites for wildlife. Bats are numerous because of the good habitat; there are 12 species identified from the lava flow. Wide-ranging carnivores can live within the flow and move out into the desert to hunt. There are ten carnivore species found in the lava flow; seven is the average number for desert ranges. Rodents and rabbits are abundant around the edges of the lava flow because there is soft sand for burrowing, vegetation for feeding, and the nearby escape cover of the lava flow.

There are many depressions in the lava flow which collect rainwater. The vegetation in these depressions is denser than that of the lava flow or the surrounding desert. These areas are particularly important for the bird life of the WSA because they provide more food and cover than any other part of the WSA. Outside the lava flow, soap tree yuccas are fairly common. These are important for nesting raptors, particularly Swainson's hawks (BLM 1976). There are high densities of raptors in the surrounding desert, especially in the winter (BLM 1981). It is likely that high rodent prey densities, such as those at the edge of the flow, partially account for this.

A phenomenon peculiar to lava flows is that many animals living on them exhibit melanism, or protective dark coloration. Two melanistic species, the rock pocket mouse and the black-tailed rattlesnake, have been found in the WSA. Both are rock-dwelling animals which are isolated to the lava flow by the surrounding desert (BLM 1976).

F. Visual

Two scenic quality rating units (SQRUs) describe the Aden Lava Flow WSA. The Aden Crater and Lava Flow are seen as one rating unit with a Class B or moderate scenic quality rating. The lava flow has a broken irregular surface which is low in profile and horizontal in form. The Crater rises above the lava flow to an elevation of 4,300 feet, and has a flat-topped conelike form. Pockets of soil support scattered vegetation. There is some degree of color contrast between the dark brown and black colored lava rock and the dark greens and light browns of the vegetation.

The south-central part of the WSA is an area of flat to gently rolling desert with a Class C scenic quality rating. The green, tan, and gray colors of creosote, mesquite, yucca, and grasses offer some contrast with the orange-brown sand dunes. This scenery is common within the region.

Approximately 20,681 acres of the WSA (the Aden Crater and Lava Flow) fall into a Visual Resource Management (VRM) Class III. The remaining 3,176 acres in the south-central part of the WSA are in a Class IV.

G. Cultural

There are no known cultural sites in the Aden Lava Flow; however, there has been very little survey in the area. There is a major paleontological site in the Aden Fumarole which may still contain significant deposits (see Chapter III, Education/Research).

H. Air

Generally, the quality of air within the Aden Lava Flow WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Aden Lava Flow WSA. The oil and gas potential for the Aden Lava Flow WSA is considered poor. Extensive volcanism in the immediate area may preclude potential oil and gas accumulations; however, petroleum source rocks could occur at depth.

The recent volcanism of the Aden Lava Flow and the occurrence of subsurface hot water and higher than normal temperature gradients at the Kilbourne Hole Known Geothermal Resource Area (KGRA), due south of the lava flow, all indicate geothermal potential in the vicinity of the WSA. However, industry (Hunt Energy 1982) has indicated that water temperatures in the area are not hot enough and at the present time, do not represent economically exploitable geothermal resources.

Currently, a Research Natural Area (RNA) exists within the northwest part of the Aden Lava Flow WSA. (See Map 1 for general location of the RNA.) All energy minerals leases in the RNA will be let with a No Surface Occupancy stipulation to protect the values of the RNA (BLM 1983).

2. Non-Energy Minerals

An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) rated the WSA as having low intermediate favorability for silver, gold, and zeolites. This rating means that some geologic characteristics are present that are favorable for the accumulation of these mineral resources.

Thin slabs of volcanic rock (basalt) occur in the WSA. This rock is desirable as a decorative and structural stone because little or no work is needed to upgrade the stone to a finished product. The potential for development of this rock is low to moderate because of the long distance to market.

B. Watershed

Water use within the Aden Lava Flow WSA is primarily by livestock and wildlife. A dirt tank is located on a small arroyo along the eastern edge of the WSA.

The WSA lies within the Lower Rio Grande declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of two grazing allotments are within the Aden Lava Flow WSA. Livestock grazing is limited on the west side of this WSA due to the

rough, broken terrain of the lava flow. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Kilbourne Hole 3023	85,488	5,760	6,828	8%
R. Cosimati 3056	22,000	1,284	17,029	77%
TOTAL			23,857	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Kilbourne Hole 3023	interior fence	1 mile
R. Cosimati 3056	dirt tank interior fence	T. 26 S., R. 1 W., Sec. 14 4 miles

Boundary Fence: Kilbourne Hole 3023 and R. Cosimati 3056 8 miles

3. Potential Rangeland Developments

The locations of the proposed rangeland developments shown in the table below are tentative. The purpose of the proposed pipelines is not to accommodate increased livestock numbers, but to redistribute grazing use over the Cosimati allotment (3056) and relieve grazing pressure around existing livestock waters. The rangeland condition on presently heavily grazed areas of the allotment would show improvement in the long-term.

PROPOSED RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
R. Cosimati 3056	pipeline	1 1/2 miles-T. 26 S., R. 2 W., Secs. 1, 12
	trough	T. 26 S., R. 2 W., Sec. 12
	pipeline	1 mile-T. 26 S., R. 2 W., Secs. 14, 15
	trough	T. 26 S., R. 2 W., Sec. 14
	pipeline	1 1/2 miles-T. 26 S., R. 1 W., Secs. 17, 18
	trough	T. 26 S., R. 1 W., Sec. 18
	pipeline	1 mile-T. 26 S., R. 1 W., Sec. 23
	trough	T. 26 S., R. 1 W., Sec. 23

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

Aden Crater is visited for its scenic and geologic values. The vehicle trail through the southeast part of the WSA is used as a scenic drive. Vehicle trails along the eastern perimeter of the lava flow are used by off-road vehicle (ORV) enthusiasts. The area around the lava flow is hunted for small game. The lava flow itself receives almost no hunting pressure due to its roughness. The Aden Fumarole is the only known cave in the WSA (see Chapter III, Education/Research). The fumarole contains a 120 foot pit. Rockhounds collect lava rock in the area. Small game hunting, ORV use, and weekend sightseeing comprise the majority of recreation uses in and around the WSA. Visitor use estimates are unavailable.

E. Education/Research

An area of 4,008 acres in the northeast part of the Aden Lava Flow was designated a RNA in 1978. The primary management objectives for the Aden Lava Flow RNA are fourfold:

1. To preserve an adequate sample of the lava flow ecosystem and the unique geological and biological phenomena associated with it.
2. To provide research and educational opportunities for scientists, educators, and others in the observation and study of this particular ecosystem. Scientists and educators are encouraged to use this area in a manner that is nondestructive and consistent with the purpose for which the area is established.
3. To preserve the full range of genetic diversity for native plants and animals.
4. To provide a basis for organized research and exchange of information on Research Natural Areas.

Even before this designation, a great deal of research was done in the lava flow. Marsha McKinnerney, Dr. William Reid, and Dr. Richard Smartt of the University of Texas at El Paso have done various studies on carnivores, bats, and other mammals in the lava flow. A number of researchers (Koschmann 1972; Lewis 1951; Prieto and Jacobson 1968; Benson 1932, 1933) have studied melanistic rodents and reptiles in the Aden Lava Flow.

Dr. Reid is also studying the plant-soil relationships in this area and hopes to do further work. Dr. Earl of New Mexico State University has indicated that he makes regular field trips to the lava flow with students from his physical geography, earth science, and geomorphology classes. He also indicated that the area provides opportunities for studies in igneous petrology, volcanism, structural geology, endogenic geomorphology, and Quaternary geomorphology and paleontology. A wide spectrum of biological and geological studies is possible in the future.

A nearly complete, well-preserved giant ground sloth was found in the Aden Fumarole in the late 1920's. The specimen can be seen at the Yale Peabody Museum. Other fumaroles could contain well-preserved late Pleistocene fossils.

The RNA has been designated limited to existing roads and trails for ORV use. No motorized cross-country travel is allowed.

F. Wildlife

There are two quail guzzlers just outside the boundary of the Aden Lava Flow WSA, one on the northwest and one on the northeast side. They are close enough to be water sources for wildlife which live on the lava flow.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the 23,857-acre Aden Lava Flow WSA are minimal, consisting of 1 dirt tank, 13 miles of fence, and 6 miles of two-track vehicle trails.

The dirt tank is located just inside the east boundary of the WSA. The fences transect the area north-south and east-west. All have wooden posts which blend in well with the landscape. With the exception of 3 miles of trail extending across the southeast one-third of the WSA, the vehicle trails are located along the perimeter of the lava flow. All of the trails are short and screened topographically.

Due to the low impact and dispersed location of these imprints in relation to the large size and rugged interior relief of the WSA, the cumulative impacts on naturalness are minimal. The quality of the WSA's naturalness is exceptional.

b. Solitude

The varied and rugged interior relief of the Aden Lava Flow provides outstanding opportunities for solitude throughout the WSA.

These opportunities are further enhanced by the large size and blocked-up configuration of the WSA. The WSA is approximately 7 miles long and 7 miles wide. Foot access into the area is available from all directions. The size, shape, and accessibility of the area would enable visitors to disperse throughout the WSA to avoid the sights and sounds of others.

Opportunities for solitude are somewhat impacted by the cherry-stemmed road into the Crater. As visitor use via motorized access increases, opportunities for solitude in the Crater would diminish proportionately.

Opportunities for solitude are also occasionally impacted by the outside sounds of trains on the Southern Pacific Railroad along the northeast boundary of the WSA. These impacts are not significant.

Overall, the quality of solitude opportunities in the WSA is excellent.

c. Primitive and Unconfined Recreation

Primitive recreation opportunities in the Aden Lava Flow WSA include hiking, backpacking, nature study, and small game hunting. During the intensive inventory, these opportunities were judged to be less than outstanding.

2. Special Features

The Aden Lava Flow contains special ecological and geological features. The area is important from a scientific and educational point of view to study the interactions and interrelationships of the area's geology, soils, flora, and fauna. A portion of the area was designated a Research Natural Area (RNA) in 1978 (see Map 1 for a general location of the RNA). Much research has been conducted in the RNA and future projects are planned (see Chapter III, Education/Research).

The Aden Lava Flow exhibits typical lava flow topography (see Chapter I, Climate and Topography). Depressions in the lava flow collect soil and rainwater (see Chapter II, Soils). In these depressions, plant vigor is good and there is a wide diversity of species (see Chapter II, Vegetation). In addition, parts of the lava flow are ungrazed due to the rough topography (see Chapter III, Livestock Grazing). The area provides habitat for a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation).

A diverse wildlife community is also associated with the lava flow due to the overlap of species from the lava flow and the surrounding desert. Some species exhibit melanism or dark protective coloration (see Chapter II, Wildlife).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Aden Lava Flow WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	18,717
mesquite-acacia savanna	3,879
creosote	1,261

b. Distance From Population Centers

The Aden Lava Flow WSA is approximately 1 hour driving time from El Paso, Texas; 1 hour from Las Cruces, New Mexico; 5 hours from Albuquerque, New Mexico; 6 hours from Tucson, Arizona; and 8 hours from Phoenix, Arizona.

B. Manageability

Several characteristics of the Aden Lava Flow WSA contribute favorably to its capability of being managed as wilderness in the long-term. The ruggedness of the lava flow inherently limits and discourages additional rangeland developments, off-road vehicle (ORV) use, and other human intrusions. The WSA's large size and blocked-up configuration enhance the likelihood of the area remaining natural and opportunities for solitude being preserved.

Management of the area as wilderness is minimally complicated by state land. State land within the lava flow limits the degree of BLM control over the WSA (see Map 1 for land status). Nonwilderness or incompatible uses on state land would negatively impact wilderness values if development of access required road construction across the lava flow. At the present time, it appears unlikely that mineral development would occur on the state land. However, if the Aden Lava Flow area is designated wilderness, approximately 1,990 acres of state land adjacent to the WSA should have a high priority for acquisition to enhance the area's manageability. The legal description for these lands is as follows.

<u>Legal Description</u>	<u>Acres</u>
T. 25 S., R. 2 W., Section 26, W1/2 (that portion south of the railroad tracks)	230
T. 26 S., R. 1 W., Section 16, All	640
T. 26 S., R. 2 W., Section 2, All	640
Section 16, E1/2, E1/2 W1/2	480
TOTAL	1,990

Continuation of vehicle use on the road into Aden Crater presents a minor manageability concern. As visitor use increases, opportunities for solitude in the Crater would diminish. In addition, the Aden Crater is within the RNA. (See Map 1 for the general location of the RNA.) The RNA management plan requires that ORV use be restricted within the RNA. If the area is designated wilderness, the necessity and feasibility of closing and rehabilitating the road should be determined during development of the wilderness management plan.

The Aden Lava Flow WSA could be managed to preserve existing wilderness values in the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Aden Lava Flow WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). This area was among the ten most commented upon proposed WSAs in the state. Maps and detailed narratives were among the data submitted.

Approximately 42 percent of the personal letters favored wilderness review of the Aden Lava Flow. Supporting reasons included the area's large size, apparent naturalness, outstanding opportunities for solitude and primitive recreation, and ecological and geological supplemental values.

Approximately 58 percent of the personal letters opposed wilderness review of the area. Opposing comments cited the roads and other imprints of man's activities as impacting naturalness and described opportunities for solitude as less than outstanding due to the outside sights and sounds of the Southern Pacific Railroad, Interstate 10, and the low level crossings of military aircraft. Aggregate minerals, oil and gas potential, geothermal energy potential, and grazing were identified as resource conflicts. One comment suggested that instead of a WSA designation, the Research Natural Area (RNA) could be expanded or the area could be designated an Area of Critical Environmental Concern (ACEC).

During the public comment period on the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983), 29 personal inputs, 13 form letters, 1 petition with 15 signatures, and 52 coupons were received indicating support for wilderness designation of the Aden Lava Flow WSA. The form letters, coupons, petition, and 14 of the personal inputs listed no supporting reasons. There were no comments received opposing wilderness designation for the Aden Lava Flow WSA.

Many of the comments favoring wilderness designation were the same as those received in previous comment periods as described above. Several comments were made regarding the size and boundaries of the Aden Lava Flow WSA. One commentator felt that Kilbourne Hole or Phillip's Hole should have been included in the WSA and other inputs indicated support for designation of an area greater than the 23,857-acre WSA. The size and boundaries of the WSA were determined by land status and the location of roads. Both Kilbourne Hole and Phillip's Hole are separated from the Aden Lava Flow WSA by non-Federal lands and roads.

Several comments pointed out that there is little designated wilderness in southern New Mexico and the Aden Lava Flow is important because of its close proximity to two Standard Metropolitan Statistical Areas (SMSAs)--Las Cruces, New Mexico, and El Paso, Texas. This information is documented in the Wilderness Analysis Report (WAR) in Chapter IV and will be analyzed in the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS) to determine how an area would add diversity to the National Wilderness Preservation System. The EIS will analyze individual wilderness recommendations in the broader context of other Federal land already designated or to be recommended as wilderness. The analysis will be based on three factors: (1) expanding the diversity of natural systems and

features, as represented by ecosystems and landforms; (2) opportunities for solitude or primitive recreation within a day's driving time (5 hours) of SMSAs; and (3) balancing the geographic distribution of wilderness areas.

The New Mexico Department of Game and Fish (NMDGF) indicated agreement with the All Wilderness Alternative, but felt a statement should be included that would allow "in the future the development of water, manipulation of habitat, and allow access to department personnel to manage the wildlife resource." At the present time, there are no wildlife proposals pending. Should there be such proposals in designated wilderness in the future, they would be analyzed in the context of the BLM's Wilderness Management Policy (WMP) (BLM 1981). The WMP states that, "Memoranda of Understanding will be developed with appropriate State game and fish agencies to clarify wildlife management jurisdictions. Wilderness Management Plans will specify wildlife habitat conditions to be maintained. Development of management plans will fully involve all Federal, State, and local agencies and organizations in the formation of management direction." It is clear that the NMDGF will be fully involved in the management of wildlife resources in New Mexico's BLM wilderness areas.

The New Mexico Department of Agriculture's comments stated that the impacts to the range livestock industry for the Aden Lava Flow WSA were inadequately addressed. The impacts to livestock grazing have been more fully discussed in the Final WAR.

Information was submitted by industry concerning the mineral potential of the Aden Lava Flow WSA. This information has been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 23,857 acres of public land within the Aden Lava Flow WSA would be recommended suitable for wilderness designation.

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. Impacts to cultural resources, air, and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There has been no energy minerals production in the Aden Lava Flow WSA. Since the geothermal resources of the Aden Lava Flow do not appear economically exploitable, geothermal development in the WSA is not assumed under this alternative. Under these assumptions, the impacts to the energy minerals industry would be minor in the short-term. The economic benefits forgone to the energy minerals industry would also be minor in the short-term.

Exploration and leasing for energy minerals would not be allowed under the mineral leasing laws after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential in the WSA or for development and production.

The sale of slab lava rock would not be allowed under the WMP. However, the effect on development of decorative stone (slab lava rock) would be negligible due to its availability outside the WSA.

Based on existing information, it appears that wilderness designation would not have significant impacts on mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under this alternative, it is assumed that some of the proposed pipelines and troughs for the Cosimati allotment (3056) would not be implemented because of the cumulative impacts on the naturalness of the WSA. A site-specific environmental assessment (EA) would be prepared to determine if the proposed pipelines are necessary for the purpose of rangeland or wilderness protection. The EA would also be used to determine how many of the proposed pipelines could be implemented and their locations.

Under the present proposal, three of the proposed pipelines on the Cosimati allotment (3056) would be buried which would result in short-term impacts due to soil disturbance and removal of vegetation. The fourth proposed pipeline would be laid across the surface of the lava flow and would have little impact on soils and vegetation. Increased livestock use around each new trough installed would affect vegetation production and compact soils on an area of approximately 40 acres. Native vegetation probably would not reestablish itself in these areas. However, additional sources of water could result in more even distribution of livestock which would balance utilization of the vegetative resource on the Cosimati allotment (3056).

Limited vehicular access on the existing trails on both allotments in the WSA would allow vegetation to increase, but would be insignificant if occasional access for maintenance of rangeland developments is authorized (see Chapter III, Livestock Grazing).

Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation, including a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element. The impacts of the added protection of wilderness designation would not be significant since existing and proposed activities would not involve extensive surface disturbance.

b. Wildlife

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide protection of wildlife habitat. The restriction on vehicular access would reduce the potential for harassment and poaching of wildlife and could reduce hunting pressure in the area.

Since no major surface disturbing activities are proposed in existing BLM plans and existing vehicle use is low, the added protection as a result of wilderness designation would not significantly differ from that of nonwilderness management.

c. Visual

Existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I, which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be permitted. However, if there were no practical alternatives, a permit could be authorized for maintenance of the dirt tank on the Cosimati allotment (3056). The fences in the WSA do not presently have vehicular access and it is unlikely that vehicular access would be authorized should the area be designated wilderness.

The use of motor vehicles on existing vehicle trails to check cattle would not be allowed. This could cause slight impacts to the livestock operators when monitoring livestock activity and could increase costs depending on the use normally made of the vehicle trails.

It is assumed under this alternative that not all of the proposed pipelines on the Cosimati allotment (3056) would be authorized. However, overall impacts to livestock operators would not be significant.

e. Recreation

Present motorized recreation use patterns would be impacted. Off-road vehicle (ORV) enthusiasts and hunters would not be permitted motorized access on vehicle trails along the eastern perimeter of the lava flow or on the vehicle trail through the southeast part of the WSA. The impacts would not be significant since vast areas of public land within the region would still be available for motorized types of recreation.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. Management of the area as wilderness is slightly complicated by state land. Nonwilderness uses on the state land could degrade natural values, opportunities for solitude and primitive recreation, and special features. The impacts could be minimal to major depending on the location, type, and extent of development and access requirements. However, developments of this nature seem unlikely at the present time. Vehicular use on the cherry-stemmed road into Aden Crater would periodically disrupt solitude in the area in and around the Crater. However, the WSA could be managed to maintain its natural appearance, opportunities for solitude and primitive recreation, and special features in the long-term.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 23,857 acres of public land within the Aden Lava Flow WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The Aden Lava Flow RNA would be managed according to the objectives outlined in Chapter III, Education/Research.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values would be significant since management of the area would be subject to administrative change in the long-term. The impacts to cultural resources, air, and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Aden Lava Flow WSA would not be protected through Congressional designation. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

The extraction of slab lava rock for building and decorative stone could occur. These activities would degrade natural values and opportunities for solitude. The impacts of extracting slab lava rock could be minimal to major depending on the extent of the activities and access requirements.

The installation of all four proposed pipelines and troughs on the Cosimati allotment (3056) could be authorized. The additional imprints of man would cumulatively degrade the natural values of the WSA.

Continued ORV access on vehicle trails along the northeast edge of the lava flow and on the vehicle trail through the southeast part of the WSA would periodically disrupt the solitude in these areas.

The impacts to wilderness values would be significant in the long-term under this alternative.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Removal of slab lava rock would have a minimal impact on soils and vegetation as there is little, if any, soil or vegetation where the lava rock is located. A minor increase in sediment load could result from extraction of lava rock. However, the impact would be of minor significance because of the shallow, indefinite drainage patterns in the lava flow.

Three proposed pipelines and troughs and possibly access roads could be constructed. Vegetation and topsoil would be removed if the roads are constructed. The fourth pipeline and trough in the lava flow would have little impact on vegetation and soils because it would be laid on top of the lava surface and construction of an access road would not be possible.

The overall impacts to water, soils, and vegetation under this alternative would not be significant.

b. Wildlife

There would be impacts on wildlife if lava rock extraction is authorized. There would be some loss of habitat and animals in the immediate area would be displaced. However, sale and extraction of slab lava rock would not be authorized in the portion of the lava flow within the Research Natural Area (RNA) and wildlife habitat there would be protected. (See Map 1 for general location of RNA.)

If range proposals to construct pipelines and troughs in the lava flow are carried out, this would affect wildlife in several ways. More water would be provided for wildlife as well as cattle. There would be some loss of vegetative cover and food for wildlife because cattle would graze in areas now unused.

Under this alternative, the cumulative impacts to wildlife would not be significant.

c. Visual

Approximately 20,681 acres comprising most of the WSA would be managed as a VRM Class III. In a VRM Class III, moderate changes in the landscape are allowed as long as the visual contrast is subordinate to the existing landscape. Approximately 3,176 acres in the south-central part of the WSA, would be managed as a Class IV which permits significant changes in the basic elements of the landscape as a result of management actions. Extraction of lava rock in the WSA could degrade visual resources in the long-term under a VRM Class III and IV.

Based on present predictions of future uses and activities in the area, impacts to visual resources would not be significant.

d. Minerals

Since present indications are that the potential for economically exploitable geothermal occurrences in the Aden Lava Flow is low to moderate, geothermal development in the WSA is not assumed under this alternative. The sale of slab lava rock would be allowed.

There would be minimal impacts on minerals exploration and development. Mining activities would be regulated to prevent unnecessary and undue degradation of the land.

e. Livestock Grazing

All proposed rangeland developments could be constructed. Rangeland developments could be checked and maintained on a convenience basis using motorized equipment. No impacts to livestock grazing would occur under the No Action/No Wilderness Alternative.

f. Recreation

Motorized recreation uses, primarily ORV use, could benefit from the improved access associated with slab lava rock extraction. Overall, the impacts to motorized recreation would not be significant.

APPENDIX B

ALAMO HUECO MOUNTAINS WSA (NM-030-038)

I. GENERAL DESCRIPTION

A. Location

The Alamo Hueco Mountains Wilderness Study Area (WSA) is located in southeastern Hidalgo County in the "bootheel" part of the State of New Mexico. The WSA is approximately 70 miles south-southeast of Lordsburg, New Mexico.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Dog Mountains, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The Alamo Hueco Mountains WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is 9 to 10 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of arid climates. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration.

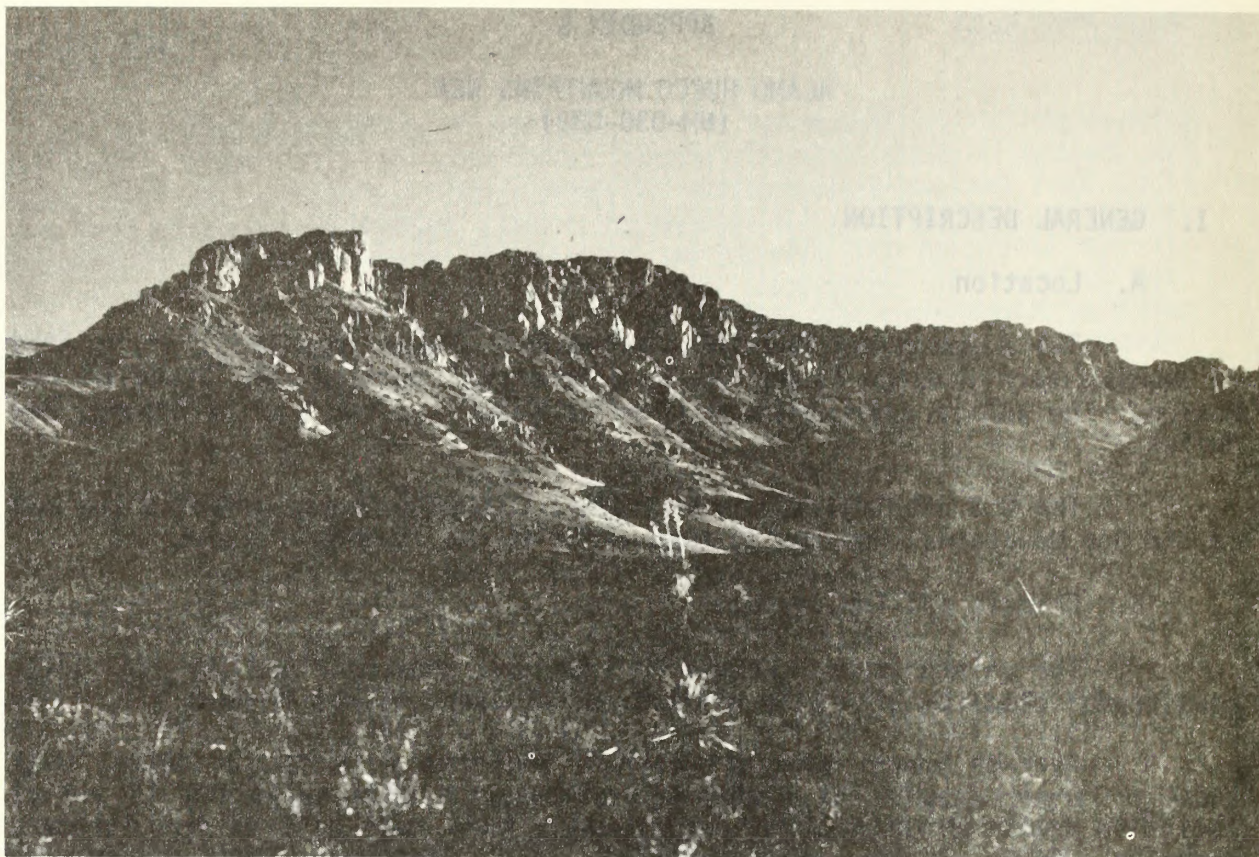
During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. The average monthly maximum temperature during July, the warmest month, is in the upper 90's. In January, the coldest month, the average monthly minimum temperature is in the upper 20's. Slightly cooler temperatures can be expected throughout the year at higher elevations.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

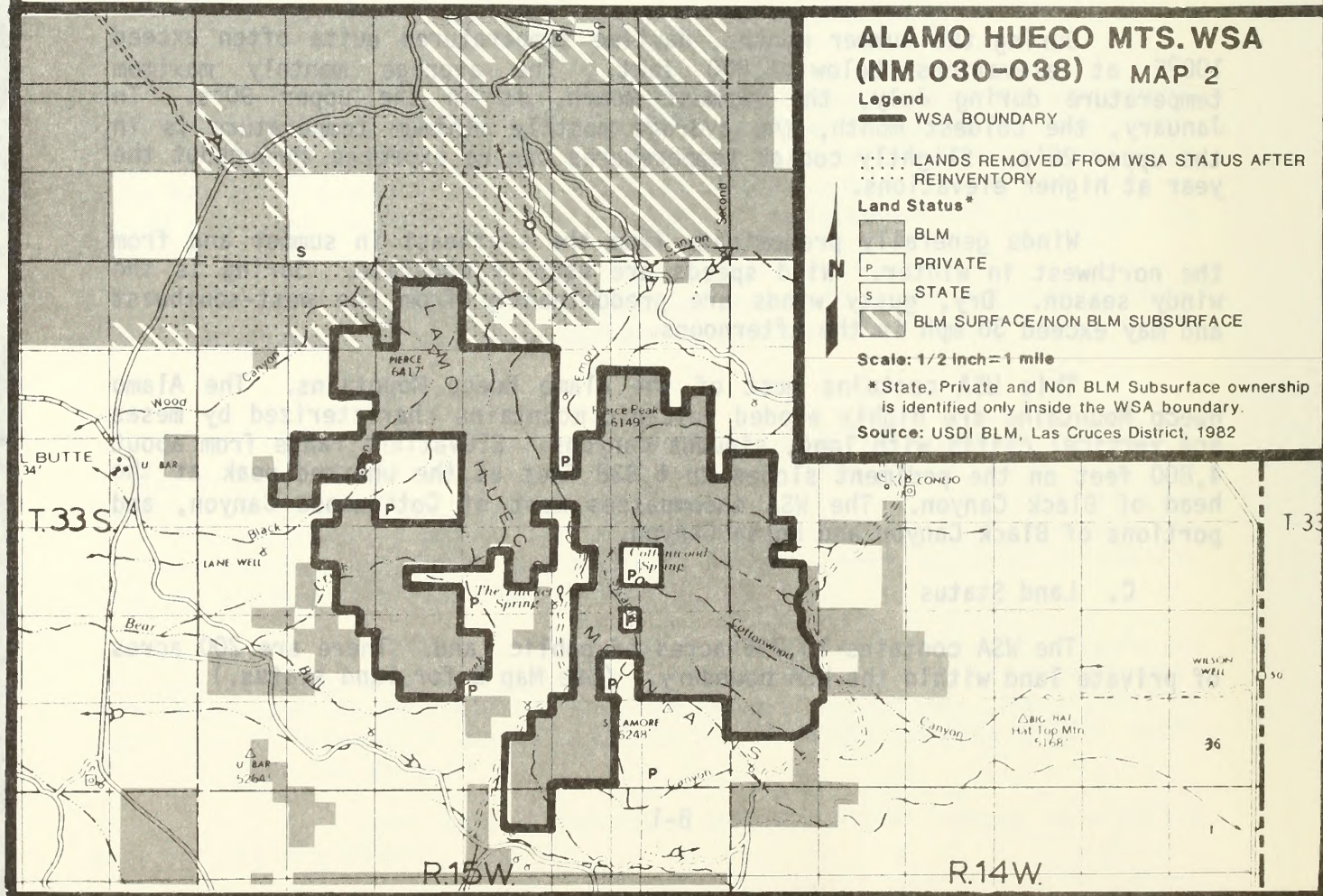
This WSA contains most of the Alamo Hueco Mountains. The Alamo Hueco Mountains are highly eroded volcanic mountains characterized by mesas and vertical cliffs with long, sinuous canyons. Elevations range from about 4,800 feet on the pediment slopes to 6,838 feet at the unnamed peak at the head of Black Canyon. The WSA encompasses most of Cottonwood Canyon, and portions of Black Canyon and Horse Canyon.

C. Land Status

The WSA contains 10,796 acres of public land. There are 200 acres of private land within the WSA boundary. (See Map 2 for land status.)



Overview of the Alamo Hueco Mountains WSA.



D. Access

There is no legal access to the Alamo Hueco Mountains WSA. The WSA is physically accessible on the west by a ranch road branching off State Highway 81, approximately 33 miles south-southwest of Hachita. Permission must be obtained from the private landowner, the Pacific Western Land and Cattle Company--U-Bar Division, to cross the private land surrounding the WSA.

II. EXISTING RESOURCES

A. Geology

The Alamo Hueco Mountains WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments. The Alamo Hueco Mountains are a horst block, bound by the Playas Valley to the west and the Hachita Valley on the east.

There is little direct geologic evidence in the Alamo Hueco Mountains for events prior to the late Cretaceous period. The regional model suggests shallow marine sedimentation in the late Paleozoic Pedregosa Basin followed by erosion or nondeposition during early and middle Mesozoic times. Marine sediments were again deposited in Cretaceous times by northward advancing seas.

The Alamo Hueco Mountains consist of layered volcanic flows ranging in age from late Cretaceous to mid-Tertiary. The flows are of varying composition and are represented in the Alamo Hueco Mountains by numerous ash flows and andesitic flows, most of which are thought to have their origin in volcanic centers to the west (Erb 1979; Reiter 1980). Many of the formations can be correlated with formations to the west in the Animas, San Luis, and Pyramid Mountains.

Basin and Range tensional forces produced faulting and jointing patterns evident today and uplifted the Alamo Hueco fault block. Much of the Basin and Range faulting extended at least into mid-Tertiary times as the youngest volcanic unit in the area has been cut by faulting. Erosion of the uplifted Alamo Hueco horst block has resulted in the present day topography.

B. Water

The Alamo Hueco Mountains WSA is situated within the Playas Basin, a noncontributing, closed basin. Drainage is towards the Playas Valley to the west and the Hachita Valley to the northeast. Ground water quality in both valleys is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

Principal ephemeral streams to the west include Black, Bear, and Bull Creeks. These stream channels of the mountain canyons become indistinct along the lower alluvial fan slopes and follow a shallow course northward to Hatchet Gap. Several ephemeral streams drain the northeast side of the WSA onto the Hachita Valley. They include Cottonwood, Sycamore, and Horse Canyons. Sheet flow predominates as the channels become less distinct near the valley floor, and follows a slight gradient to the southeast towards the Mexican border. Surface flows in the ephemeral streams generally occur as a result of summer thundershowers.

C. Soils

Soils of the Alamo Hueco Mountains WSA were derived primarily from igneous parent bedrock types. The three major soil types occurring within

the WSA are dependent on the landform on which they occur. The most prevalent soil type occurs on steep hillsides where soils are shallow and stony. Exposed bedrock outcropping is common with the soil material being interspersed between the areas of rock outcropping. At lower elevations on mountain footslopes, soils are moderately deep to deep and typically are very gravelly on the surface.

D. Vegetation

1. General

The vegetation and associated range sites within the Alamo Hueco Mountains WSA consist of four types:

Vegetation Type	Range Site	Federal Acres
Juniper-oak brush	Mountains	10,675
Creosote	Gravelly	25
Mixed desert shrub	Gravelly loam	20
Deciduous trees	Gravelly sand	76

Juniper trees, oak brush, ocotillo, and sumac occur in the higher elevations and in protected canyons. Grass species (muhlys, gramas, threeawns, and tobosa) with other shrubs such as yucca, snakeweed, and mesquite occur on the mountain slopes down to the lower elevations.

Creosote is the dominant vegetation on gravelly sites in the flat areas located on the northern edge of the WSA. Associated shrub species are tarbush, mesquite, mariola, acacia, and snakeweed. Tobosa grass occurs in patches.

Mixed desert shrubs are the dominant vegetation on the gravelly loams in the southern part of the WSA. Vegetation is predominantly snakeweed, mesquite, tarbush, mariola, and creosote. Tobosa grass occurs in patches.

Deciduous trees and shrub species such as Arizona walnut, oak, hackberry, mesquite, box elder, seepwillow, and acacia occur on gravelly sands in the canyon bottoms. These are pseudoriparian areas and were identified as special habitat for wildlife.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Coryphantha scheeri - Scheer pincushion cactus
 Status: There are three varieties; two are Federal candidate species.
 Habitat: Open plains and flats; often in alluvial soils, 3,000-5,000 feet.

Species: Ferocactus wislizenii - southwestern barrel cactus
 Status: Selected by New Mexico State Heritage program as a special concern element.
 Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet.
 Disappearing rapidly due to over collection.

Species: Penstemon lanceolatus - scarlet tube beardtongue
 Status: Selected by the New Mexico State Heritage Program as a special concern element.
 Habitat: Uncommon, scattered on southwest facing slopes and in rocky canyons under mountain mahogany, juniper, and oak. Also occurs in open areas.

E. Wildlife

1. General

A number of factors combine in the Alamo Hueco Mountains to make it an extremely valuable area for wildlife. There are several habitat sites in the Alamo Hueco Mountains; grass mountain and mixed shrub mountain are the largest. Canyons which have patches of riparian vegetation such as sycamore trees intersect the mountain range. Springs and windmills are found in these areas. Although most of the canyons and the riparian habitat are on private land and outside the WSA boundary, they still strongly influence the wildlife within the WSA because of the close availability of water, cover, and food.

There are many cliffs and caves in the range. The area is isolated and very close to the Mexican border. These features also contribute to the unusual wildlife community. Golden eagles and red-tailed hawks are known to nest in the cliffs and prairie falcons probably do also (BLM 1981).

A good-sized population of javelina is found in the Alamo Hueco Mountains. In New Mexico, this species is only found in the southwestern part of the state.

Judging by reported mountain lion sightings in the area, this species also has a viable population in and around the WSA. Mountain lions have large home ranges, so there would not be many resident animals within the WSA; however, juveniles without territories might frequently travel through the area.

Other game species in the WSA are mule deer (more common at the edges of the area) and Montezuma quail. The latter are seen only infrequently.

A variety of nongame mammals, birds, reptiles, and amphibians have been recorded in the WSA.

2. Threatened or Endangered Fauna Species

Several threatened or endangered animal species have been verified in the Alamo Hueco Mountains and several more may be found there.

Historically, desert bighorn sheep, a state-listed endangered species, were reported in the area. There are also several recent sightings, but evidence that they use the area is inconclusive (BLM 1980).

Other state endangered species reported in or near the WSA are the coatimundi, the thick-billed kingbird, the varied bunting, and possibly the giant spotted whiptail. All of these were reported from waters or riparian areas in the canyons, which are outside the WSA boundary. However, these areas are so intermingled with Federal land that the endangered animals might be found within the WSA (BLM 1981; Hayward et al. n.d.; Hubbard et al. 1979).

A Federally-listed species, the gray wolf, was historically found in the WSA. There have been unverified sightings of wolves over the last 10 years in the New Mexico "bootheel", but there is no reason to think they are in the Alamo Hueco Mountains on a regular basis (Carley 1982; Hayward et al. n.d.).

F. Visual

The Alamo Hueco Mountains have a Class A (high) scenic quality rating. The landform of the mountains consists of rough, craggy mesas with crumbling outcrops. The line in the landform consists of inclined or horizontal bands. Landform colors are a variety of deep shades of reddish-brown. Vegetation occurs in alternating bands of greenish-gray.

The Alamo Hueco Mountains are in a Visual Resource Management (VRM) Class II.

G. Cultural

Known prehistoric sites in and around the WSA consist of a number of very significant cave sites with stratified deposits and a series of camp sites in the flatter valley bottoms. The caves in these mountains have been identified as an area eligible for the National Register of Historic Places as an archaeological district. Some of the caves are significant on the national level because they contain stratified deposits that have materials in them that usually are not found in exposed sites (e.g., basketry, cloth, vegetable remains, and other perishables). In addition, cave sites are very rare in this portion of the Southwest. These caves can provide significant information concerning little known artifact types and prehistoric environmental data.

Historically, the mountains were first visited by the Spanish in a military campaign led by Hugh O'Connor in 1774. Later, there was considerable homesteading in the mountains and they were used during Pershing's incursion into Mexico.

H. Air

Generally, the quality of air within the Alamo Hueco Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

Emissions from the Phelps-Dodge Copper Smelter, located approximately 5 miles northwest of the WSA in the Playas Valley, could slightly lower the air quality of the area. This could only occur if weather conditions are such that lower quality air is trapped by an inversion layer which eventually drifts over the WSA.

The only other major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds (commonly gusting in excess of 30 mph) result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the Alamo Hueco Mountains WSA. However, numerous oil and gas lease applications have been filed on parcels located within the boundaries of the WSA.

Potentially good oil and gas lands are within the Alamo Hueco Mountains WSA boundaries. Although the mountains themselves do not appear to be favorable for oil and gas accumulations due to their volcanic nature, much of the pediment and bolson area immediately adjacent to the Alamo Hueco Mountains has good petroleum potential. According to the Minerals Management Service, a number of sections in T. 33-34 S., R. 14 W., just east of the WSA are most favorable. The presence of potentially good source and reservoir rocks at depth combined with favorable geologic structures, such as the Pedregosa Basin to the southeast and the Overthrust Belt which runs through the "bootheel", makes these and nearby areas prime exploration targets. The Humble No. 1 State "BA" well was drilled approximately 4 miles northwest of the WSA to 14,585 feet and had shows of both oil and gas. Several energy companies (including ARCO, Texaco, Exxon, May, Placid, and Getty) have expressed interest in the Alamo Hueco Mountains area. Geophysical exploration has occurred in the area and ARCO programmed a test well in the vicinity of U-Bar Ridge. Exploration interest in the area is due to geologic similarities with the Overthrust Belt.

A protective stipulation is presently attached to all energy minerals leases let within a 22,322-acre area of the Alamo Hueco Mountains. The primary purpose of the stipulation is to protect the desert bighorn sheep and its habitat. The Alamo Hueco Mountains WSA is wholly within the desert bighorn sheep habitat area. The stipulation generally states that surface use or occupancy could be prohibited or restricted if such use or occupancy would adversely affect the desert bighorn sheep or its habitat.

Travertine deposits in the Alamo Hueco Mountains area may indicate a potential for geothermal energy; however, the potential appears to be low.

2. Non-Energy Minerals

Manganese mineralization occurs with travertine deposits in the Bluff Creek formation in the area between the Alamo Hueco Mountains and Dog Mountains. Psilomelane bands up to 1 inch thick are present in 2-3 foot beds of travertine. A small prospect pit was dug in T. 34 S., R. 15 W., Section 11, SE 1/4, south of the WSA. Manganese is on the National Defense Stockpile Inventory of Strategic and Critical Minerals. However, the manganese does not appear to be of significant commercial value.

B. Watershed

Water use within the Alamo Hueco Mountains WSA is primarily by livestock and wildlife. There is one dirt tank inside the WSA that utilizes

surface runoff to provide water for livestock and wildlife. Several springs are found in canyons of the Alamo Hueco Mountains that support riparian vegetation important for wildlife, however, they are located on private land adjacent to the WSA boundary. Additionally, several well facilities and dirt tanks are located just outside the WSA boundary that are for livestock watering and limited domestic use.

C. Livestock Grazing

1. Allotments

Parts of two grazing allotments are within the Alamo Hueco Mountains WSA. These allotments are part of the Pacific Western/Phelps-Dodge Corporation's U-Bar Ranch. Some areas in the WSA are ungrazed due to the steep slopes and distance from livestock water developments. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
U-Bar 1510	19,896	4,548	10,405	52%
U-Bar 2022	39,006	7,608	391	1%
TOTAL			10,796	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
U-Bar 1510	dirt tank	T. 33 S., R. 15 W., Sec. 28
U-Bar 2022	interior fence	2 1/2 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Education/Research

If desert bighorn sheep are reintroduced into the area, it is possible that a New Mexico State University graduate student would do a research monitoring project on them. There is a possibility of paleoenvironmental studies in some of the dry caves and rock shelters by Dr. Thomas VanDevender of the University of Arizona.

E. Wildlife

The New Mexico Department of Game and Fish plans to reintroduce desert bighorn sheep into the Alamo Hueco Mountains in the near future (Sandoval 1982). There are no wildlife developments in the WSA at this time, but the Big Hatchets-Alamo Huecos Habitat Management Plan (BLM 1982) contains a proposal to construct water developments for desert bighorn sheep. It may be necessary to allow access by helicopter for construction of these waters.

Six windmills and three springs are located on private land, less than 1/2 mile from the WSA. As mentioned in Chapter II, Wildlife, these are used by wildlife in the WSA.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Alamo Hueco Mountains WSA generally appears natural. Imprints of man on public land within the WSA consist of a dirt tank and two-track vehicle trails in drainages. These imprints are substantially unnoticeable due to the topographic screening provided by the rugged terrain. Rangeland developments outside the WSA boundary on private land in Horse Canyon, Emory Canyon, and on Bull Creek are also substantially unnoticeable because of topographic screening. The outstanding scenic values of the Alamo Hueco Mountains further enhance the area's natural character.

b. Solitude

Outstanding opportunities for solitude exist throughout the Alamo Hueco Mountains. These opportunities are primarily a result of the rugged topography. The Alamo Hueco Mountains are dissected by numerous steep canyons which provide excellent opportunities to escape the sights and sounds of others. Although not all of the major canyons are Federally-owned, outstanding opportunities for solitude are available within the WSA.

c. Primitive and Unconfined Recreation

The Alamo Hueco Mountains offer outstanding opportunities for primitive and unconfined recreation. The scenery, geology, vegetation, wildlife, and cultural values of these mountains result in an exceptional primitive recreational resource. Specific opportunities include hiking, nontechnical rock climbing, backpacking, hunting, photography, and sightseeing.

These opportunities are limited only by the land ownership patterns surrounding the WSA. Because of the convoluted public land configuration, it is difficult for visitors to fully utilize the recreation resources of the Alamo Hueco Mountains or to be assured of access to the area.

2. Special Features

The Alamo Hueco Mountains WSA contains special ecological, cultural, and scenic features.

The ecological features include both vegetation and wildlife values of scientific and educational interest. The Alamo Hueco Mountains provide habitat for one Bureau sensitive plant species proposed for Federal listing, one Federal candidate plant species, and two plant species selected by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation). The Alamo Hueco Mountains are an extremely

valuable area for wildlife and support a variety of game and nongame species. The number of habitat sites in the WSA, the special habitat features such as cliffs and caves, and the isolation of the area and its proximity to the Mexican border all contribute to its value for wildlife. Five state endangered animal species have been reported in or near the area (see Chapter II, Wildlife).



Cougar hunter in the Alamo Hueco Mountains.

The cultural features of the Alamo Hueco Mountains WSA are also of scientific and educational value. Caves in and around the WSA have been identified as eligible for the National Register of Historic Places as an archaeological district (see Chapter II, Cultural).

The Alamo Hueco Mountains also have outstanding scenic features with a Class A (high) scenic quality rating (see Chapter II, Visual).

Future projects of scientific and educational value planned in this WSA include reintroduction of desert bighorn sheep and paleoenvironmental studies in dry caves and rock shelters (see Chapter III, Wildlife and Education/Research).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Alamo Hueco Mountains WSA as being in the Mexican Highlands Shrubsteppe Province with a potential natural vegetation of oak-juniper woodland.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

Vegetation Type	Acres
oak juniper woodland scrub	10,675
creosote	25
Trans-Pecos shrub savanna	20
northern flood plain forest	76

b. Distance from Population Centers

The Alamo Hueco Mountains WSA is approximately 4 hours driving time from El Paso, Texas; 3 hours from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Two factors which affect the manageability of the Alamo Hueco Mountains WSA are land status patterns and lack of legal access.

The land status in the Alamo Hueco Mountains is a mosaic of private and public lands. As a result, the WSA boundary is very convoluted, consisting of many "fingers" of public land surrounded by private land. Nonwilderness or nonconforming uses on the private land, such as proliferation of grazing developments or oil and gas exploration and drilling, could negatively affect the naturalness of the WSA, opportunities for solitude, and the supplemental values of the area. Opportunities for primitive recreation are negatively impacted by the convoluted boundary in that it is almost inevitable that a visitor hiking through the area must hike across private land. Visitors attempting to stay within the WSA boundary are unable to fully utilize the recreation resource.

At the present time, there is no legal access to the WSA. Permission must be obtained from the private landowner for access across private land to the WSA. Therefore, the accessibility or availability of the area for wilderness purposes, such as primitive recreation, is not guaranteed. Easements or rights-of-way would have to be obtained to guarantee visitors access to the area.

Primarily because of the convoluted land status patterns in and around the Alamo Hueco Mountains WSA, the BLM cannot reasonably manage the area to preserve its wilderness characteristics over the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Alamo Hueco Mountains WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). Maps, photographs, road affidavits, and data on the Pedregosa Basin were included with the comments.

Approximately 60 percent of the personal letters favored wilderness review of the area. Supporting comments cited the size, naturalness, and outstanding opportunities for solitude and primitive recreation as justification. The area's outstanding scenery, cultural values, and abundance of wildlife species were listed as supplemental values.

Approximately 40 percent of the personal letters opposed wilderness review. Existing rangeland developments and access routes were cited as impacts on naturalness. The irregular shape of the WSA and land status patterns were identified as manageability problems. Another comment suggested that wilderness designation would attract many visitors resulting in overuse and deterioration of the wilderness resource. Oil and gas potential and mining were listed as resource conflicts.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), 21 personal letters, 4 form letters, 1 petition with 15 signatures, and 52 coupons were received indicating support for wilderness designation of the Alamo Hueco Mountains WSA. The form letters, petition, coupons, and five of the personal letters listed no supporting reasons.

Several of the comments favoring wilderness designation reiterated supporting reasons mentioned in previous public review periods such as natural values, and solitude and primitive recreation opportunities. Several respondents indicated support for wilderness designation of an area other than the 10,796-acre WSA. The acreage figures cited ranged from 10,000 to 25,000 acres. There were no maps or discussions of alternative boundaries included with these comments. The size and boundaries of the Alamo Hueco Mountains WSA were determined by land status and the locations of roads.

Many of the pro-wilderness comments addressed the special features of the Alamo Hueco Mountains WSA. These comments cited the area's scenic, geologic, cultural, wildlife, and botanic values as reasons for favoring wilderness designation. These comments noted that the area "is uniquely situated with respect to transitional ecological zones" and is "extremely valuable for endangered species."

Several respondents commented on specific manageability issues analyzed in the Wilderness Analysis Report (WAR). Comments regarding the area's lack of legal access consisted of the following observations: "legal access could easily be arranged via swaps or easements" and "the lack of legal access is of benefit because of the added protection it provides for the area." Several respondents acknowledged the potential manageability conflicts caused by land status patterns and the area's resulting convoluted boundary and suggested that the area offers "an excellent opportunity for

land exchanges to create wilderness." Acquisition of inholdings or contiguous non-Federal land was considered in cases where acquisition would enhance the manageability of a WSA. The purpose of the BLM's wilderness review is not to create wilderness areas. Should the BLM acquire contiguous private land in the future, the area could be reevaluated for wilderness suitability in a future land use plan. In addition, the impacts on wilderness values of the rangeland developments, roads, and vehicle trails on the non-Federal lands would be considered in formulating a recommendation at that time.

Pro-wilderness comments on the area's oil and gas potential generally reflected the attitude that the WSA should be protected and mineral resources developed elsewhere. The BLM's Wilderness Study Policy states that "recommendations as to an area's suitability or unsuitability will reflect a thorough consideration of any identified or potential energy and mineral resource values." The question of wilderness versus mineral development will ultimately be Congress' decision.

Four personal letters were received in opposition to wilderness designation of the Alamo Hueco Mountains WSA. Two of these public inputs listed no reasons. Other comments cited the mineral potential of the area as justification for a nonsuitable wilderness recommendation.

The Phelps-Dodge Corporation submitted a voluminous document including photos and maps. Many of the comments in the document submitted by Phelps-Dodge addressed what they considered deficiencies in the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983). Only those substantive comments addressing the Alamo Hueco Mountains WAR are summarized here.

Phelps-Dodge disagreed with the discussion of impacts to wilderness values if the area were left open for mineral activities as described under the No Action/No Wilderness Alternative. The Phelps-Dodge comments stated that the discussion failed to acknowledge that "only a small fraction of these areas would even be touched by any mineral activity" and "most areas which are affected are touched only by exploration activities which are easily rehabilitated." In addition, Phelps-Dodge comments asserted that the document should at least recognize that the extent of disturbance caused by both hard rock and leasable mineral activities can be closely controlled by the BLM regulations applying to those activities.

Phelps-Dodge suggested that the discussion of Energy Minerals in Chapter III be clarified to indicate that potentially good oil and gas lands lie within the WSA boundary. Phelps-Dodge also disputed statements in this section of the Draft WAR that some geophysical exploration programs in the Alamo Hueco Mountains have been suspended because of the high cost of exploration on private land. Changes have been made to incorporate these comments into the Energy Minerals section of this Final WAR. Phelps-Dodge also indicated strong agreement with the BLM's evaluation of the WSA's manageability.

Two respondents made general comments indicating that in lieu of wilderness designation, the area should receive some form of special designation. The New Mexico Natural History Institute indicated that they "would like to see a special wildlife protection area or perhaps a research

natural area in about 4,000 acres of the Alamo Hueco Mountains." Another comment stated that "Although BLM is not proposing the Alamo Huecos as wilderness, I urge you to retain its natural features and archaeological values under BLM's administrative regulations."

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 10,796 acres of public land within the Alamo Hueco Mountains WSA would be recommended suitable for wilderness designation. (See Map 2 for WSA boundary.)

If the WSA is designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. The impacts on energy minerals also could be significant under this alternative. The impacts on nonprimitive types of recreation, air quality, and education/research were clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

There has been no production of energy minerals within the WSA. However, much of the pediment and bolson area surrounding the Alamo Hueco Mountains has good oil and gas potential. Any leases let in the area before wilderness designation would be covered by protective stipulations for desert bighorn sheep and wilderness values. Because of the protective stipulations, exploration within the WSA could be denied and oil and gas could only be reached by directional drilling. Leaseholders could be impacted in the short-term (the life of the lease) since activities that would adversely affect desert bighorn sheep and its habitat or impair wilderness values would not be allowed.

It is assumed that after wilderness designation, existing leases, if unexplored, would not be reissued and there would be no new leasing. If a discovery were made in an area adjacent to the WSA, energy minerals would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the oil and gas potential in the WSA. The economic benefits lost would be expenditures and jobs in the local economy as well as royalties paid from production. If no new leases are let after wilderness designation, approximately 10,796 acres of Federal minerals that have been identified as having good potential for oil and gas would not be leased. Assuming the leases are noncompetitive and are leased at an annual rental fee of \$1.00 per acre, \$10,796 of annual leases (of which the State of New Mexico receives 50 percent) would be lost. Although the WSA boundary excludes most of the best potential oil and gas area surrounding the Alamo Hueco Mountains, the impacts to energy minerals could be significant under the All Wilderness Alternative.

The impacts to locatable minerals within the Alamo Hueco Mountains WSA would not be significant since the occurrences of manganese to the immediate south of the WSA are probably not of significant commercial value.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation in the WSA as well as protecting habitat for a Bureau sensitive plant species proposed for Federal listing, a Federal candidate plant species, and two special concern plant species selected by the New Mexico State Heritage Program (see Chapter II, Vegetation). However, the impacts of the added protection of wilderness designation would not be significant since existing and proposed activities under nonwilderness management would not result in extensive surface disturbance.

b. Wildlife

Wilderness designation would maintain the remote nature of wildlife habitat by limiting development and vehicular access in the area. This would benefit desert bighorn sheep which prefer isolation. Javelina habitat would also be protected.

Projects proposed for desert bighorn sheep in the Big Hatchets-Alamo Huecos Habitat Management Plan (HMP) would not be significantly affected because the WMP allows habitat manipulation or wildlife projects for the benefit of an endangered species as long as the resulting changes would be compatible with the preservation of wilderness character, consistent with wilderness management objectives for the area, and if the installations are the minimum necessary to accomplish the task. However, approval from the State Director would be needed on a case-by-case basis. Should it be necessary, visitor use could be regulated under this alternative to prevent disturbance to the desert bighorn sheep.

Other endangered animal species which have been found in the Alamo Hueco Mountains are mainly dependent on riparian vegetation. Although most of this habitat is outside the WSA, the small portion within the WSA would be protected by wilderness designation.

Since no major surface disturbing activities are proposed in existing BLM plans and energy mineral activities would be restricted by the protective stipulation for endangered species, the added protection as a result of wilderness designation would not differ greatly from nonwilderness management. The impacts under this alternative would not be significant.

c. Visual

Existing visual resources would be protected. The area would be managed as a VRM Class I, which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

The impacts to visual resources under this alternative would not be significant.

d. Cultural

Since access within the designated wilderness area would be limited to foot and horseback travel, site vandalism by individuals currently gaining access to the area with motorized vehicles could decrease. However, the impacts of the added protection of wilderness designation would not be significant since existing limitations on access across surrounding private land currently prevents many individuals from entering the area.

e. Livestock Grazing

Generally, motorized access within the designated wilderness would not be allowed. However, a permit for vehicular access for maintenance purposes to the existing dirt tank on the U-Bar allotment (1510) could be authorized if there were no practical alternatives. Use of motor vehicles on existing vehicle trails to check livestock would not be permitted. Checking livestock on foot or horseback could result in less effective livestock management due to the inconvenience and time requirements and could affect operation costs depending on the use normally made of vehicle trails.

The overall impacts on livestock grazing would not be significant under this alternative.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. However, due to the surrounding private land, the Alamo Hueco Mountains WSA could not be managed to preserve the existing wilderness resources in the long-term. The outside sights and sounds of nonwilderness uses on the adjacent private land could degrade natural values, opportunities for solitude, and the special features of the WSA. The impacts of uses on adjacent lands could be minimal to major depending on the location, type, and extent of development and access requirements.

Land status patterns would also affect the capability of the BLM to provide outstanding opportunities for primitive recreation. Because of the convoluted public land configuration, visitors would be unable to fully utilize the recreation resources of the Alamo Hueco Mountains.

In addition, access to the area is controlled by surrounding landowners. Wilderness users could be denied access to the area.

The impacts to wilderness values under this alternative could be significant.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the 10,796 acres of public land comprising the Alamo Hueco Mountains WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The area would be managed under existing land use plans which do not prescribe any special designation or management other than leasing the area for energy minerals with a protective stipulation for wildlife values and management of the habitat for desert bighorn sheep under the Big Hatchets-Alamo Huecos HMP.

Under the No Action/No Wilderness Alternative, wilderness values and energy minerals could be significantly impacted. The impacts to nonprimitive types of recreation, air, and education/research would be clearly insignificant. Therefore, these resources were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Alamo Hueco Mountains WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

Oil and gas exploration and development in the Alamo Hueco Mountains could result in degradation of wilderness values. The impacts could be minimal to major depending on the type, location, and extent of the activities and access requirements as well as the capability of rehabilitating the impacts of oil and gas drilling and development activities. The protective oil and gas leasing stipulation covering most of the mountain range would protect the desert bighorn sheep, if reintroduced into the area in the future, and would indirectly provide some protection to existing wilderness values.

The transplant of desert bighorn sheep into the area and management under the HMP would enhance the special wildlife features of the WSA.

The impacts to wilderness values under the No Action/No Wilderness Alternative could be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There would be a loss of vegetation and soils if oil and gas exploration drilling and development occur in the Alamo Hueco Mountains WSA.

A small increase in sediment load could result from development on oil and gas leases, and new geophysical exploration. Increased sediment would be of minor significance because the drainage basins are topographically closed. The impacts on soils, water, and vegetation would not be significant since the protective leasing stipulation for wildlife would restrict surface use and occupancy.

b. Wildlife

If there is oil and gas development, the protective leasing stipulation would directly protect desert bighorn sheep and other endangered species. Nesting raptors, javelina, mountain lions, and nongame species within the area would be indirectly protected. There could be some habitat loss and some animals would be disturbed by human presence and if there were more people in the area, poaching might occur. Actions proposed in the Big Hatchets-Alamo Huecos HMP could be carried out without WMP constraints.

Wildlife and wildlife habitat would not be significantly impacted under this alternative.

c. Visual

Under this alternative, the entire WSA would be managed as a VRM Class II. Changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. Since the protective leasing stipulation would restrict surface use and occupancy, the Class A scenic quality of the area would probably be substantially maintained in the WSA. The impacts on visual resources would not be significant.

d. Cultural

Under this alternative, vehicular access within the area would not be restricted which could result in increased visitation to the area. Although this would make site vandalism easier, access across surrounding private land would probably still be limited. The impacts on cultural resources under this alternative would not be significant.

e. Minerals

Leasing would continue. Exploration drilling, development, and production activities would comply with the constraints of the protective stipulation for desert bighorn sheep. Restrictions on surface use and occupancy, seasonal restrictions, limitations on types of exploration, and restrictions on types and locations of access could result in additional operating costs for the oil and gas industry. There could be significant impacts on energy minerals under this alternative.

There would be no significant impacts on locatable minerals exploration and development under this alternative. Mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 CFR 3809).

f. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. Grazing permittees would be allowed to use vehicles on existing trails to check livestock. There would be no impacts to livestock grazing.

APPENDIX C

BIG HATCHET MOUNTAINS WSA (NM-030-035)

I. GENERAL DESCRIPTION

A. Location

The Big Hatchet Mountains Wilderness Study Area (WSA) is located in southeastern Hidalgo County in the "bootheel" part of the State of New Mexico. The WSA is approximately 50 miles south-southeast of Lordsburg, New Mexico.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Big Hatchet Peak, New Mexico quadrangle. This map is at the 15-minute scale.

B. Climate and Topography

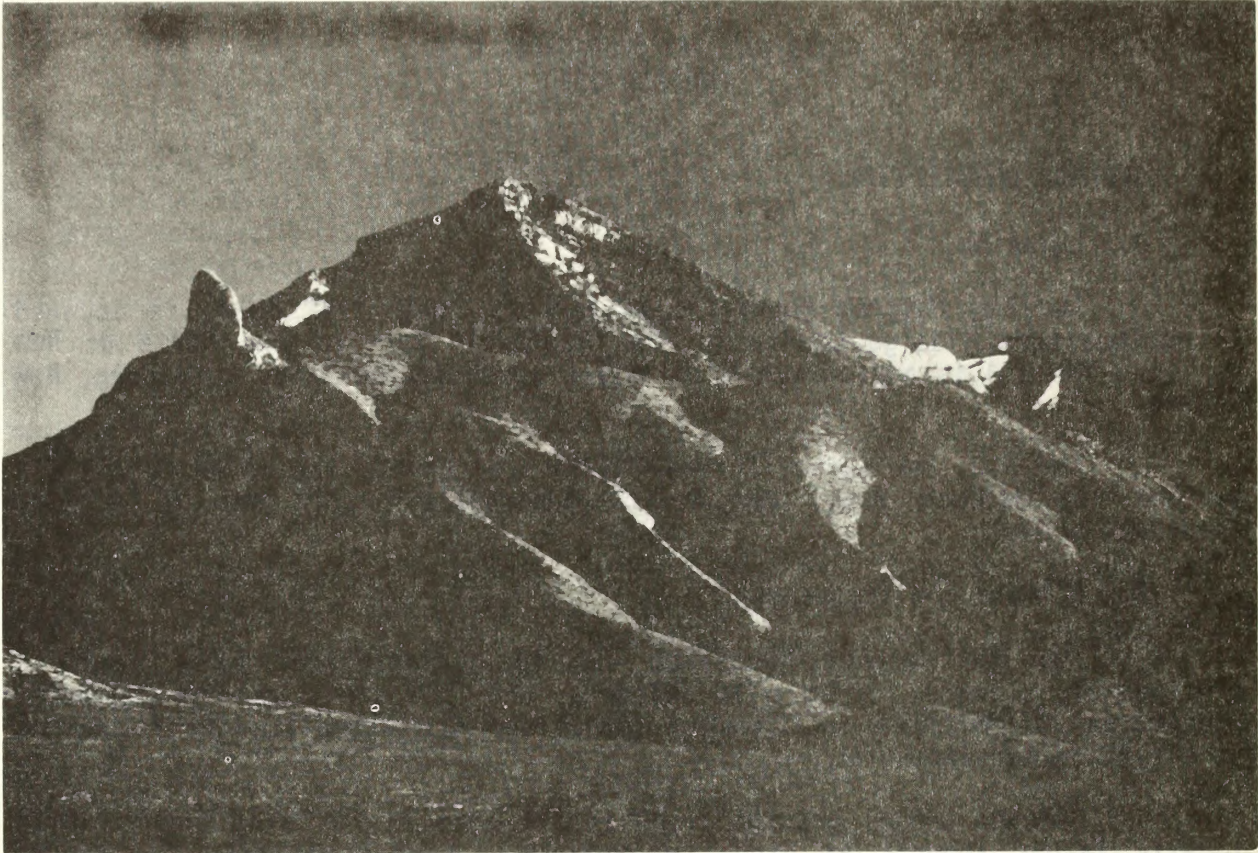
The Big Hatchet Mountains WSA is characterized by a semiarid continental climate, with mild winters and pleasant to hot summers. Significant differences in climatic conditions are associated with changes in elevation and exposure.

Average annual precipitation in the area is 10 to 12 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of southern desert climates. Approximately half the annual precipitation occurs in July, August, and September as rain accompanying thundershowers. The showers are generally brief but may be intense and result in flash floods in the arroyos. Snowfall generally averages about 5 inches a year.

During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. Average monthly maximum temperature during July, the warmest month, is in the upper 90's. In January, the coldest month, average monthly minimum temperature is in the middle 20's. Elevation is a significant factor in determining the temperature of any specific locality. Generally, for each 1,000-foot increase in elevation, there is a little more than a 3° decrease in temperature.

Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

This WSA consists of the Big Hatchet Mountains, portions of the Hachita Valley on the northeast, and the Playas Valley on the southwest. The Big Hatchet Mountains are a northwest-southeast trending mountain range characterized by very rugged and steep terrain. Elevations vary from about 4,400 feet up to 8,366 feet at Big Hatchet Peak. Major canyons within the Big Hatchet Mountains include Thompson Canyon and Sheridan Canyon.



Big Hatchet Mountains WSA.

C. Land Status

The WSA contains a total of 58,014 acres of public land. Total inholdings within the WSA consist of 1,920 acres of state land and 46 acres of private land (patented mining claims). (See Map 3 for land status within the WSA boundary.)

The Big Hatchet Mountains WSA complex is divided into three roadless areas by the location of roads and state land. The largest of these areas, encompassing Big Hatchet Peak, contains 41,390 acres of public land. Inholdings include 1,280 acres of state land and the 46 acres of private land.

The second area is east of the Sheridan Canyon road and includes 14,480 acres in the southeast part of the Big Hatchet range. There are 640 acres of state land inholdings in this area.

The third area is located in the south-central part of the mountain range. It is separated from the other two areas by the Sheridan Canyon road and state land. This area contains 2,144 acres of public land. There are no non-Federal inholdings. This area was originally identified as a 5,240-acre WSA in the New Mexico Wilderness Study Area Decisions (BLM 1980). The area was reduced to 2,144 acres as a result of the Secretary's Policy Announcement of December 28, 1982, which deleted split estate lands (Federal surface/non-Federal subsurface) from wilderness consideration. The

BIG HATCHET MTS. WSA (NM 030-035) MAP 3

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

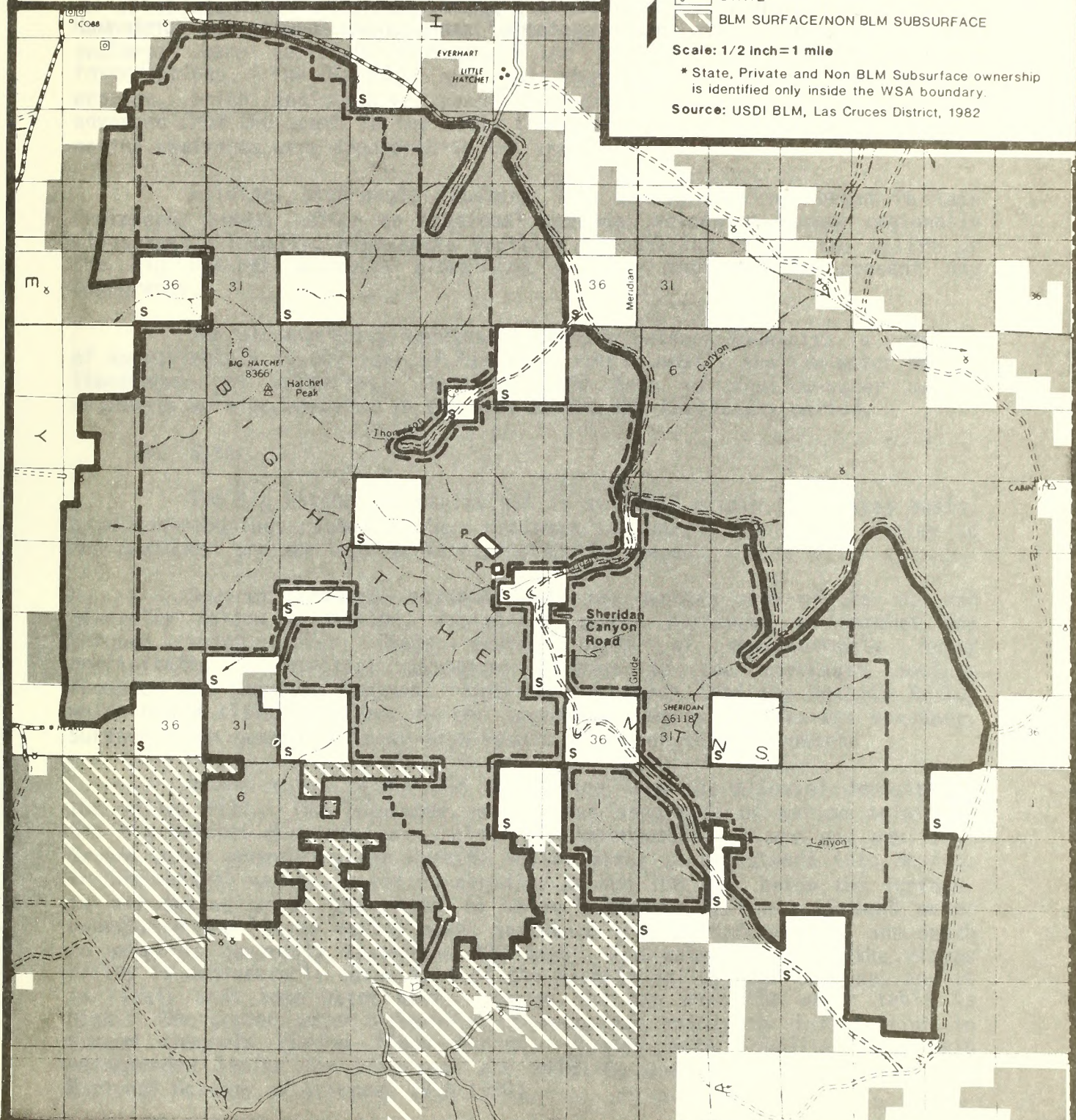
Land Status*

- BLM
- P PRIVATE
- S STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



New Mexico State Director received permission from the Director to study this 2,144-acre area for wilderness under the authority of Section 202 of the Federal Land Policy and Management Act of 1976.

D. Access

There is no legal access to the Big Hatchet Mountains WSA. The best physical access is by way of the ranch road branching east-southeast off of State Highway 81 at Hatchet Gap, approximately 15 miles southwest of Hachita. This road leads into a system of ranch roads forming the north and east boundaries.

II. EXISTING RESOURCES

A. Geology

The Big Hatchet Mountains WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault-block mountains separated by basins filled with alluvial and shallow lake deposits.

In early Paleozoic times, the area now known as the Big Hatchet Mountains was inundated by seas advancing from the southwest. Marine sediments were deposited throughout the Paleozoic era with only minor interruptions. The Mesozoic era was characterized by nondeposition or erosion, which indicates a possible regional uplifting. Shallow seas advanced from the south in the early Cretaceous period and another series of marine sediments were deposited in the area.

Folding, high-angle faulting, and thrust faulting began in late Cretaceous times. After an erosional episode, volcanism became regionally widespread. Finally, high-angle faulting and tilting caused the uplift of the Big Hatchet mountain block and erosion produced the present day topography.

The stratigraphic section of the Big Hatchet Mountains is composed of approximately 10,000 feet of Paleozoic rocks, mostly shallow-water marine limestones and dolomites. Another 5,000 feet of shallow-water marine sediments were accumulated in the area during the Cretaceous period.

B. Water

The Big Hatchet Mountains WSA is situated within the Playas Basin, a noncontributing, closed basin. Drainage is towards the Playas Valley to the southwest and the Hachita Valley to the northeast.

Several ephemeral streams drain the western side of the WSA and generally follow a shallow, indistinct course northward to Hatchet Gap through which water flows during times of exceptionally heavy precipitation. Principal ephemeral streams to the northeast include Thompson and Sheridan Canyons. Both streams empty into the Hachita Valley which has a slight gradient to the southeast towards the Mexican boundary. Surface flows generally occur as a result of summer thundershowers.

Ground water in the WSA is derived from the alluvial deposits of the valley fill. The limestone, shale, and sandstone of marine origin in the Big Hatchet Mountains are relatively impermeable and are not aquifers. Ground water underlying the Hachita Valley moves southeastward into Mexico. In the central valley, water is normally around 100 feet below the surface. In the upland area, the depth to water exceeds 500 feet. Ground water underlying the Playas Valley moves northward towards Hatchet Gap, and depth to water is generally less than 200 feet. The water table of the Playas Valley is considerably above that of the Hachita Valley near the gap, and it is likely that some water moves through the gap when the water table is high. The ground water reservoir is recharged mainly by infiltration in stream channels during flood runoff. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Soils of the Big Hatchet Mountains WSA vary depending on the particular landform on which they occur. Shallow, stony soils on steep slopes are the most common and occur at higher elevations of the Big Hatchet Mountains. These soils are commonly interspersed between areas of exposed limestone bedrock and outcroppings. At lower elevations on footslopes and alluvial fans at the base of the mountains, soils are deeper, have a gravelly surface, and commonly have a layer of calcium carbonate (caliche) under the surface.

D. Vegetation

1. General

The vegetation and associated range sites within the Big Hatchet Mountains WSA consist of six major types:

Vegetation Types	Range Sites	Federal Acres
Pinyon-juniper - mixed mountain shrub	Mountains	28,752
Creosote	Gravelly	26,166
Mixed desert shrub	Gravelly sand	316
Tobosa-tarbrush	Clayey	2,420
Tobosa	Draws (swales)	338
Mesquite	Sandy	22

The Big Hatchet Mountains dwarf surrounding mountain ranges and appear as an island in this region. Pinyon-juniper is the dominant vegetation in the higher mountain elevations around Big Hatchet Peak (BLM 1980). On the mountain slopes and surrounding hills, vegetation consists of a mixed mountain shrub aspect including sumac, agave, buckbrush, beargrass, oak, mountain mahogany, spicebush, snakeweed, mariola, ocotillo, yucca, and creosote. Grass species (gramas, tobosa, muhlys, needle and thread, threeawns, and tridens) are also abundant.

Creosote is the dominant vegetation on gravelly areas surrounding the mountain range. Shrub species that characterize this area are snakeweed, mariola, sumac, ocotillo, graythorn, mesquite, and tarbrush. Grass species include bush muhly, threeawns, tobosa, fluffgrass, and tridens.

Mixed desert shrub occurs on gravelly sand areas in the sandy arroyos of canyon bottoms. These are pseudoriparian areas and have been identified as special habitat for wildlife. Shrub and tree species include Wright's silktassel, agave, beargrass, pale wolfberry, Fendlerbush, oak, acacia, juniper, Apacheplume, and mountain mahogany. Grasses include gramas and tridens.

Tobosa grass and tarbrush are the dominant vegetation on the deep clayey areas on the west and south sides of the WSA. Creosote invades these areas from the adjacent gravelly sites. Other shrub species include sumac, graythorn, and fourwing saltbush. Associated grasses are burro grass and bush muhly.

Tobosa draw (swale) areas occur on the south side of the WSA. Tobosa occurs in small dense patches with alkali sacaton, burro grass, and vine-mesquite. Invading shrub species are mesquite, snakeweed, tarbush, and creosote.

Mesquite prevails on a small sandy area in the southern part of the WSA. Other associated shrub species are fourwing saltbush and snakeweed.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Aletes filifolius

Status: Selected by the New Mexico State Heritage Program as a state sensitive species.

Habitat: On rocky canyon slopes; commonly associated with pinyon and juniper.

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Coryphantha orcuttii macraxina

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Occurs above 7,000 feet.

Species: Coryphantha scheeri - Scheer pincushion cactus

Status: There are three varieties; two are Federal candidate species.

Habitat: Open plains and flats; often in alluvial soils, 3,000-5,000 feet.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

Species: Penstemon dasyphyllus - thickleaf beardtongue

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Occurs on gravelly slopes and desert grasslands.

Species: Perityle lemmonii - rock daisy

Status: Selected by the New Mexico State Heritage Program as a state sensitive species.

Habitat: Grows in crevices of boulders on limestone cliffs from 5,300-5,600 feet.

E. Wildlife

1. General

Most of the Big Hatchet Mountains WSA is a mixed shrub mountain habitat site with some significant pockets of pinyon-juniper grass mountain and pseudoriparian sites. Creosote sites occur at the lower elevations.

Cliffs are abundant and important in the range because they provide habitat for nesting raptors and a host of smaller wildlife. Limestone formations such as those in the Big Hatchet Mountains have many caves which are shelter to a variety of wildlife ranging from mountain lions to various species of bats.

Because most of the country around the Big Hatchet Mountains is a lower-elevation, desert shrub landscape, the range has the effect of being an island. Not only do the mountains support a completely different fauna than the surrounding desert, but they are a stopover point for wide-ranging wildlife such as mountain lions (which find a good source of food and cover) and migrating birds.

The resident wildlife population is varied because of the changes in elevation, habitats, and soils within the WSA. An assortment of birds ranging from the mountain-dwelling scrub jay to the desert-dwelling black-throated sparrow could be expected within the WSA.

The New Mexico Department of Game and Fish (NMDGF) has specified the Big Hatchet Mountains as a mule deer herd unit. They expect the optimal population size to be five deer per square mile; presently there are less than this. There is also a javelina population in the WSA. Donaldson (1965) estimated their numbers at 43 animals in 1962.

2. Threatened or Endangered Fauna Species

Desert bighorn sheep are the most significant wildlife feature of the WSA. They are a state-listed endangered species. Bighorn sheep were once abundant in the Big Hatchet Mountains. In the early 1950's, as many as 125 to 150 bighorn sheep lived in the Big Hatchet Mountains, using nearly all of the range. Several years of severe drought in the late 1950's and the resultant competition with deer and domestic livestock decimated the herd. By the early 1960's, less than 25 bighorn sheep remained. Their numbers have stayed low since; this can probably be attributed to predation.

The NMDGF and BLM have committed themselves to the survival of this herd. In 1979, the NMDGF built a paddock in Romney Canyon, 1 1/2 miles west of Big Hatchet Peak and put 11 bighorn sheep from the Redrock Game Farm into this paddock. Historically, this was a bighorn sheep use area. The idea behind this move was not only to supplement the existing herd, but to induce the bighorn sheep to remain in an unused portion of the range. The native herd stays in the southern part of the range and frequently crosses several miles of desert to reach a mineral lick in the Cairn Hills. This desert crossing appeared to make the bighorn sheep vulnerable to predation. It is hoped that the introduced bighorn sheep will stay in the paddock area

and not travel to the Cairn Hills. Thus far, the experiment appears successful. The introduced bighorn sheep have moved south toward the indigenous bighorn sheep, probably for breeding, but return to the Hatchet Peak area afterwards. As of August 1981, the introduced herd had increased to 19 animals.

Historically, the gray wolf, a Federal-listed species, was found in all of the "bootheel" country of New Mexico, including the WSA. However, there are no recent documented sightings in the Big Hatchet Mountains. The species barely survives, even in Mexico.

A state-listed species, the Sonora mountain kingsnake, was collected in the Big Hatchet Mountains. This species is tied to moist conditions such as those found in canyons.

F. Visual

The Big Hatchet Mountains have a Class A (high) scenic quality rating. The landform of the Big Hatchet Mountains is characterized by massive, irregularly folded and striated mountains. Colors are pale pinks on peaks or other high elevations where bare stone shows through. In the lower elevations, colors are reddish brown or gray. Texture is grainy with some striations. Vegetation is alternately banded with rock at high elevations and more diffuse toward the bottom. Vegetation colors are the dark green of evergreen trees and shrubs, with yellow-tan grasses at lower elevations.

Portions of the Big Hatchet Mountains WSA are in three Visual Resource Management (VRM) classes as follows: Class II--45,214 acres, Class III--2,560 acres, Class IV--10,240 acres.

G. Cultural

There are several small prehistoric sites that have been reported in this area; however, they have not been recorded or evaluated as to their significance. Although there have been no systematic surveys to locate cultural resources, based on topography and water sources, the Big Hatchet Mountains WSA has a low potential for cultural resources.

H. Air

Generally, the quality of air within the Big Hatchet Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

Emissions from the Phelps-Dodge Copper Smelter, located approximately 3 miles west of the WSA boundary in the Playas Valley, could slightly lower the air quality of the area if weather conditions are such that lower quality air is trapped by an inversion layer which eventually drifts over the WSA. The only other major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds (commonly gusting in excess of 30 mph) result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Big Hatchet Mountains WSA. However, shows of oil and gas have been reported from the Hachita Dome wildcat well in T. 30 S., R. 15 W., NMPM, Section 12, SW1/4, approximately 1 1/2 miles northeast of the WSA, and the Humble State "BA" well in T. 32 S., R. 16 W., NMPM, Section 25, approximately 2 miles southwest of the WSA boundary and south-southwest of U-Bar Ridge. Three Federal oil and gas leases and numerous lease applications have been filed on parcels located within the WSA boundary. All three of these leases were let prior to the enactment of the Federal Land Policy and Management Act on October 21, 1976. These leases are referred to as "pre-FLPMA" leases. Two of the existing leases have no special stipulations attached.

The entire WSA has been classified as prospectively valuable for oil and gas by the Minerals Management Service. The steep mountainous portions of the WSA are outside the area considered to have the best potential for hydrocarbon accumulations due to the exposure and erosion of large quantities of potential reservoir rocks (BLM Mineral Resource Inventory 1981). However, the potential for hydrocarbons, particularly dry gas, in the pediments and bolsons adjacent to the Big Hatchet Mountains, is good. The Big Hatchet Mountains area and adjacent valleys are considered favorable localities within the Pedregosa Basin and the Overthrust Belt for exploration and possible accumulations of hydrocarbons. Many petroleum geologists familiar with the area have compared the Pedregosa Basin of Hidalgo County to the prolific Permian Basin of west Texas and eastern New Mexico (Greenwood, et al. 1977; Greenwood 1969; Wengard 1970; Zeller 1970).

There are three major factors which are positive indicators for hydrocarbons in the Big Hatchet Mountains area. These are: (1) a thick sequence (15,000 feet) of Paleozoic and Cretaceous marine sediments containing numerous potential source beds and reservoir rocks; (2) favorable structural and stratigraphic traps; and (3) shows of gas in the Humble "BA" well and oil and gas in the Hachita Dome well. Placid Oil Company, ARCO, May Petroleum, Gulf Oil Company, and Exxon Company USA have all indicated interest in the Big Hatchet Mountains area, especially near U-Bar Ridge. Dawson Geophysical, Geophysical Services Inc., Grant Geophysical, Geosource Inc., Pac-West Geophysical, Arma Geophysical, Daniel Geophysical, and Tidelands Geophysical have all applied for or conducted seismic surveys in the vicinity of the Big Hatchet Mountains.

A protective stipulation is presently attached to all oil and gas leases to protect the desert bighorn sheep and its habitat in the Big Hatchet Mountains (Big Hatchets-Alamo Huecos Oil and Gas Leasing EA, BLM 1980; revised 1982). Approximately 50,000 acres in the main part of the Big Hatchet Mountain range, on and around U-Bar Ridge, and in the Cairn Hills (which are south of the southeast part of the WSA) are within the desert bighorn sheep habitat area. Most of the desert bighorn sheep habitat area covered by the protective stipulation is within the boundaries of the WSA.

All drilling, exploration, development, and production activities on leases within the desert bighorn sheep habitat area would be subject to the protective stipulation. In addition, all exploration activities in the Big Hatchet Mountains are closely monitored by both the BLM and the New Mexico Department of Game and Fish (NMDGF) to protect the sheep.

2. Non-Energy Minerals

Several subeconomic deposits of locatable minerals are known to occur in the Big Hatchet Mountains. These include lead, zinc, silver, and copper. The old Lead Queen Mine (T. 31 S., R. 15 W., Section 35) was operated during the 1930's and possibly into the 1940's. Production is unknown. Lead, zinc, and silver occur at the Sheridan Mine (T. 31 S., R. 15 W., Section 22). This mine is patented. One carload of zinc carbonate was shipped in 1917 and the mine was last worked in the 1930's. A copper prospect is located in T. 31 S., R. 15 W., on a ridge near Big Hatchet Peak. Rich copper ore was said to have been shipped out on burros from this small deposit in the early 1900's.

Gravity studies of the Big Hatchet Mountains revealed the presence of a magnetic anomaly on the eastern side of the range. Rosario Exploration Company completed a 250+ foot hole in T. 31 S., R. 14 W., Section 21, SW1/4 in May 1981, but obtained no additional insight into the anomaly. The anomaly could be an indication of a metallic ore body at depth. The company is planning to drill again in a different location and remains optimistic about the possibility of locating an ore body.

Information submitted by the Phelps-Dodge Corporation during the public comment period on the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983) indicates fluorite mineralization in the Big Hatchet Mountains. Phelps Dodge conducted a reconnaissance of the area from December 1982 through April 1983 to search for mineralization which may be related to a deep seated intrusive in the area of the magnetic anomaly discussed above or other buried intrusives. Additional core drilling and exploration is needed to accurately assess the potential for locatable minerals in the Big Hatchet Mountains WSA.

Due to present economic conditions, domestic fluorite deposits are not competitive with less expensive foreign sources. All of the minerals (lead, zinc, silver, copper, and fluorspar [fluorite]) are on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

Gypsum of sufficient quality for agricultural use occurs in the Big Hatchet Mountains. There are currently only three unpatented mining claims recorded within the WSA; all were located prior to the passage of FLPMA on October 21, 1976. Several truckloads of gypsum were shipped from these claims on the western side of the range in the late 1950's and early 1960's. According to Kottowski (1962), high calcium-low magnesium (cement-grade) limestone occurs throughout the Big Hatchet Mountains. The occurrence of mineable deposits of gypsum and the probable occurrence of cement-grade limestone in the Big Hatchet Mountains is of interest; however, unless the market demand for such commodities increases or the demographics of the area change in such a way as to produce a local need, these deposits will remain subeconomic.

B. Watershed

Water use within the Big Hatchet Mountains WSA is primarily by livestock and wildlife. There are nine wildlife water developments inside the WSA designed to catch and store relatively small amounts of precipitation (see Chapter III, Wildlife). Also within the WSA, there are five dirt tanks that provide seasonal water use, a storage tank, and a drinking trough (see Chapter III, Livestock Grazing). Several well facilities and dirt tanks for livestock watering and limited domestic use are located just outside the WSA boundary.

A portion of the western boundary of the Big Hatchet Mountains WSA is within the Playas Valley declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are present within the Big Hatchet Mountains WSA. Most of the Big Hatchet Mountain range is not grazed by livestock due to steep slopes. Licensed grazing use on public land includes cattle and a few horses. U-Bar (2022) and the Heard Ranch (2024) are part of the Pacific Western/Phelps-Dodge Corporation. The Hatchet Ranch (2027) is under an implemented Allotment Management Plan (AMP).

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
U-Bar 2022	39,006	7,608	5,690	15%
Heard Ranch 2024	14,826	1,356	14,382	97%
Hatchet Ranch 2027	115,729	13,944	37,942	33%
TOTAL			58,014	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
U-Bar 2022	interior fence	1/2 mile
Heard Ranch 2024	storage tank and trough interior fence	T. 31 S., R. 15 W., Sec. 29 2 miles
Hatchet Ranch 2027	dirt tank dirt tank dirt tank dirt tank dirt tank interior fence	T. 30 S., R. 15 W., Sec. 34 T. 31 S., R. 15 W., Sec. 12 T. 31 S., R. 15 W., Sec. 10 T. 31 S., R. 14 W., Sec. 31 T. 31 S., R. 15 W., Sec. 35 6 1/2 miles

Boundary Fences: Heard Ranch 2024 and U-Bar 2022 2 miles
Hatchet Ranch 2027 and U-Bar 2022 3 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

The Big Hatchet Mountains are a state game refuge and are closed to hunting. Opportunities for recreation in the WSA are for primitive, dispersed activities and are described in Chapter IV, Primitive and Unconfined Recreation.

E. Education/Research

The main research in this area involves the desert bighorn sheep population (see Chapter II, Wildlife). There is a potential for paleoenvironmental studies in dry caves.

F. Realty Actions

A communication site, consisting of one small antenna and battery pack, is located on top of Big Hatchet Peak. At present, there is no record of a right-of-way being granted for this installation, and the site is unauthorized. Maintenance frequency and responsibility have not been determined.

G. Wildlife

There are a number of wildlife waters which were constructed for desert bighorn sheep. Nine umbrella or metal apron units are within the Big

Hatchet Mountains WSA. Another umbrella unit is on a state section adjacent to the WSA, but influences the bighorn sheep in the WSA since it is a source of water in a major use area.

Mineral supplement stations have been placed in the Big Hatchet Mountains. Use of these stations by the indigenous bighorn sheep has cut down on movement of the bighorn sheep to the Cairn Hills (Bavin 1982).

A Habitat Management Plan (NMDGF and BLM 1982) has been written for the Big Hatchets-Alamo Huecos complex. Planned actions include fencing some canyons to keep cattle out during the growing seasons, and prescribed or controlled burns to thin out shrub species and improve desert bighorn sheep habitat. Predators would be controlled until the bighorn sheep herd stabilizes. Mineral licks would be maintained. At the base of the mountains, vegetation manipulation may be used on some creosote areas. More new waters may be developed or old nonfunctional ones restored.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of the Big Hatchet Mountains WSA is affected by a variety of imprints of man: rangeland developments, wildlife waters, vehicle trails and roads, and mining activity.

Rangeland developments within the WSA include dirt tanks and fences. The fences and the majority of the dirt tanks are in the lower elevations. The windmill in Sheridan Canyon is on private land. Nine wildlife waters are dispersed throughout the mountain range. The impacts of these developments are mitigated by the large size of the WSA, the dispersed locations of the developments, and topographic screening. These imprints have an insignificant impact on naturalness.

The road through Sheridan Canyon does not have a significant impact on naturalness. The part of the road in T. 31 S., R. 15 W., Sections 13, 24, and 23, follows a very rocky arroyo and requires a four-wheel drive vehicle. The rest of the road south of Sheridan Windmill, although originally constructed and maintained, is not a well improved road.

Mining impacts in the WSA are insignificant. The patented mines in Sheridan Canyon and the Proverbial Gyp mining claims along the west slope of the mountain range are presently inactive. The visual impacts of past activity are only noticeable in the general vicinities of the mines.

The Big Hatchet Mountains WSA appears to have been affected primarily by the forces of nature. The core of the WSA, which consists of the Big Hatchet Mountain range, is especially natural. The imprints of man are substantially unnoticeable because of the large size and rugged topography of the WSA. The naturalness of the Big Hatchet Mountains WSA is of a very high quality.

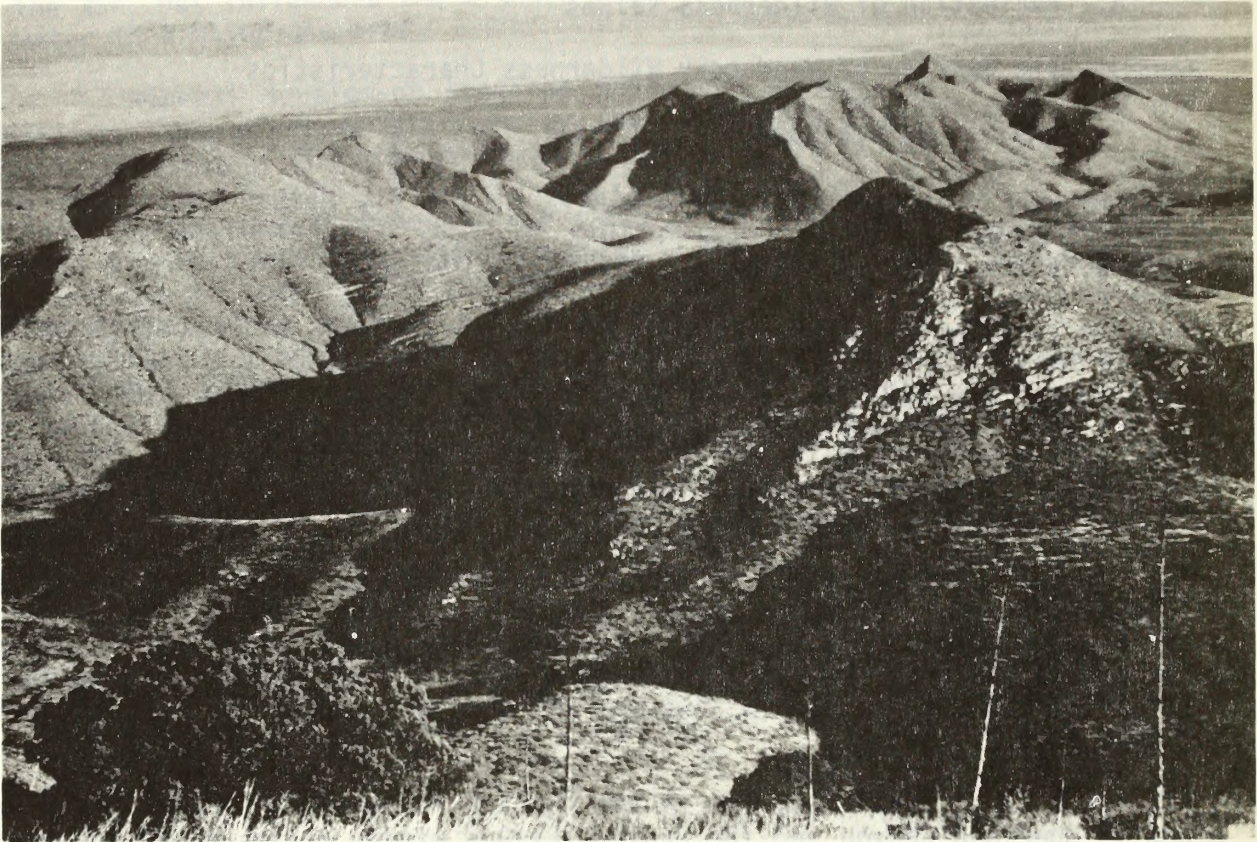
b. Solitude

The Big Hatchet Mountains WSA provides outstanding opportunities for solitude. The large size of the WSA and generally well blocked-up configuration allow visitors to disperse and avoid the sights and sounds of others. The rugged topography of the Big Hatchet Mountains provides numerous secluded canyons and ridges. Many of the canyons, such as Thompson Canyon, also have quite a bit of vegetative screening. High quality outstanding opportunities for solitude are available throughout the WSA.

c. Primitive and Unconfined Recreation

There are outstanding opportunities for primitive and unconfined recreation in the Big Hatchet Mountains WSA. The boundary roads

surrounding the WSA require high clearance or four-wheel drive vehicles, so motorized recreation within the WSA is discouraged.



Overview of the Big Hatchet Mountains from Thompson Canyon.

Primitive recreation opportunities within the WSA include hiking, backpacking, horseback riding, mountain climbing, and sightseeing. The rugged terrain and large size of the WSA provide for these outstanding and challenging recreation opportunities. The outstanding solitude and remoteness of the area enhance the primitive aspects of recreational experiences in the WSA. Opportunities for sightseeing are good throughout the WSA. The lucky visitor might catch a glimpse of the desert bighorn sheep.

The Big Hatchet Mountains WSA offers outstanding opportunities for primitive and unconfined recreation in terms of both quality and diversity of available opportunities.

2. Special Features

The Big Hatchet Mountains WSA contains special ecological and scenic features. The ecological features include both vegetation and wildlife values of scientific and educational interest. The Big Hatchet Mountains provide habitat for one Bureau sensitive plant species proposed for Federal listing, two state sensitive plant species, and two plant species selected by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation). The Big Hatchet Mountains WSA

contains special habitat features such as cliffs for nesting raptors and caves which provide shelter for a variety of wildlife. Two state endangered animal species are found in the area; the desert bighorn sheep and the Sonora mountain kingsnake. The desert bighorn sheep have received a significant amount of study by the New Mexico Department of Game and Fish (see Chapter II, Wildlife).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Big Hatchet Mountains WSA as being in the Mexican Highlands Shrubsteppe Province with a potential natural vegetation of oak-juniper woodland.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Types</u>	<u>Acres</u>
mountain mahogany oak scrub	28,752
creosote	26,166
Trans-Pecos shrub savanna	316
grama tobosa shrubsteppe	2,758
mesquite-acacia savanna	22

b. Distance From Population Centers

The Big Hatchet Mountains WSA is approximately 4 hours driving time from El Paso, Texas; 3 hours from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Several characteristics of the Big Hatchet Mountains WSA affect the ability of the BLM to manage the area to preserve present wilderness values: pre-Federal Land Policy and Management Act (FLPMA) unpatented mining claims, patented mines, nonpublic lands, pre-FLPMA oil and gas leases, the Sheridan Canyon road, and cherry-stemmed roads.

There are three pre-FLPMA unpatented mining claims in the Big Hatchet Mountains WSA. The presence of these claims affects the manageability of the WSA in two ways:

1. The FLPMA specifies that mining uses that existed on the date of approval of the Act may continue in the same manner and degree during the time that an area is under wilderness review. Such mining uses are grandfathered and may continue even if the uses would impair wilderness suitability.

In addition, mining claimants may be recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976, and the claimant can show BLM that the claim continues to be supported by such a discovery. Valid existing rights convey a more liberal development standard than grandfathered rights in that activities on valid claims are not limited to the same manner and degree. When it is determined that the valid existing rights can be exercised only through activities that will impair wilderness suitability, the activities will be regulated only to prevent unnecessary and undue degradation. If the pre-FLPMA claims in the Big Hatchet Mountains WSA meet the above criteria, wilderness values in the vicinity of the mining activities could be degraded before the area is designated wilderness.

2. Once an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in an area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, wilderness values could be degraded after the area is designated wilderness.

The likelihood of development on these claims is remote due to the subeconomic nature of the deposits. The presence of the claims does not pose a major obstacle to wilderness management of the area at the present time.

Private land inholdings affecting the manageability of the WSA consist of two patented mining claims. At the present time, the mines are subeconomic and inactive. Granting vehicular access to these patented lands, should it be necessary in the future, would not pose major manageability problems since the parcels are less than 1 mile from the Sheridan Canyon road and the access would cross less than a 1/4 mile of the WSA. At the present time, the private inholdings do not pose a significant manageability problem.

State land inholdings and cherry-stemmed state land also limit the degree of BLM control over the WSA. All of the state land is leased for oil and gas, and rangeland developments are located on some of the state land. Nonwilderness uses on the state land or the development of access could negatively impact basic wilderness values (roadlessness, size, naturalness, solitude, and primitive recreation). Such development could also impact the area's most significant supplemental value, the desert bighorn sheep. However, extensive development on the 1,920 acres of state land inholdings is improbable because the parcels are situated within the mountain range proper, where the terrain is rugged and steep. It is also unlikely that the State of New Mexico would allow development that would endanger the desert bighorn sheep.

Should all or a portion of the Big Hatchet Mountains WSA be designated wilderness, certain state and private inholdings and non-Federal lands adjacent to the designated area should be acquired. The topographic integrity of the designated area would be enhanced and the potential for impacts on wilderness values as a result of incompatible uses on these lands would be eliminated. Acquisition of the following lands would enhance the manageability of the designated wilderness.

<u>Legal Description</u>	<u>Acres</u>
<u>State Land</u>	
T. 30 S., R. 15 W., Section 32: All	640
T. 30 S., R. 16 W., Section 36: All	640
T. 31 S., R. 14 W., Section 32: All	640
T. 31 S., R. 15 W., Section 2: All	640
Section 3: SE1/4 SW1/4, SW1/4 SE1/4	80
Section 10: NW1/4 NE1/4, NE1/4 NW1/4	80
Section 13: E1/2 SE1/4	80
Section 16: All	640
Section 20: S1/2	320
Section 23: S1/2 NE1/4, SE1/4 NE1/4, N1/2 S1/2, SW1/4 SE1/4	320
Section 26: E1/2	320
Section 32: All	640
Section 36: All	640
T. 32 S., R. 14 W., Section 5: SW1/4 SW1/4	40
Section 8: NE1/4 NW1/4, W1/2 W1/2	200
T. 32 S., R. 15 W., Section 2: All	640
Total	6,560
<u>Private Land</u>	
The patented mining claims in:	
T. 31 S., R. 15 W., Section 15: SE1/4	
Section 22: NE1/4	
Section 23: SW1/4 NW1/4	
Total	46
GRAND TOTAL	<u>6,606</u>

Parts of three pre-FLPMA oil and gas leases overlap the WSA boundary. Two of these leases are approximately 1 mile northwest of U-Bar Ridge. One of the leases near U-Bar Ridge has a No Surface Occupancy Stipulation and expires October 31, 1986. The other lease near U-Bar Ridge expires July 31, 1985, and has no special stipulations. The third pre-FLPMA lease is along the north boundary of the WSA due south of the Hatchet Ranch. It has no special stipulations and expires September 31, 1986. As with mining claims, mineral leases on lands under wilderness review issued prior to the date of enactment of FLPMA are guaranteed certain rights; both while such lands are under interim management and also after such lands are designated wilderness. All three of the pre-FLPMA leases in the Big Hatchet Mountains WSA represent valid existing rights, but the rights are dependent upon the specific terms and conditions of each lease; in this case, the No Surface Occupancy Stipulation attached to one of the leases. Activities for the use and development of these leases would be required to satisfy the nonimpairment criteria unless this would unreasonably interfere with the rights of the lessee, in which case the impairing activities would be allowed to proceed. Therefore, there is the potential for the degradation of wilderness values in the vicinity of the three pre-FLPMA leases, both before and after the area is designated wilderness. These leases do not, however, represent a major manageability problem. Only approximately 1,000 acres of the three leases are within the WSA boundary. The leases are far enough from the large core of the Big Hatchet Mountains WSA that the impacts of exploration drilling, development, and production would not significantly and cumulatively degrade wilderness values. In addition, the leases will expire in July 1985, September 1986, and October 1986. If the area has been designated wilderness and there has been no drilling on the leases as of their expiration dates, the leases would not be reissued.

The Sheridan Canyon road does not receive much use at present. If vehicular use of the road should increase, opportunities for solitude in the canyon would diminish. Increased vehicular use could also stress the desert bighorn sheep. The same impacts, to a lesser degree, could occur if vehicular use increases on the five roads cherry-stemmed into the WSA. Should the area be designated wilderness, serious consideration should be given to restricting vehicular access on these roads, especially the Sheridan Canyon road. Vehicular use on the road could be limited to the grazing permittee, the NMDGF, and other users if there were no practical alternatives. Restricting use on these roads could benefit not only wilderness values, but also the very sensitive desert bighorn sheep.

Manageability problems are somewhat significant in the southern and southwest part of the WSA around U-Bar Ridge. The potential for oil and gas is good and industry has indicated special interest in this area. Split estate lands (Federal surface/private subsurface) form the southwest and southern parts of the WSA boundary. There is also cherry-stemmed state land, cherry-stemmed roads, and pre-FLPMA oil and gas leases in this part of the WSA. There is serious potential for nonwilderness uses to occur on non-Federal lands or split estate lands on and around U-Bar Ridge, such as oil and gas exploration drilling at a minimum.

However, the core of the WSA containing the mountain range proper could be managed to preserve wilderness values in the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Big Hatchet Mountains WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The Big Hatchet Mountains WSA proposal was among the ten most commented on recommendations in the state. Photographs, road affidavits, maps, and a list of mining claims were included with the comments.

Approximately 58 percent of the personal letters supported wilderness review of the Big Hatchet Mountains. The supporting comments concentrated on outstanding opportunities for solitude and primitive recreation and the supplemental geological, scenic, and wildlife values of the area.

Approximately 42 percent of the personal letters opposed wilderness review of the area. Opposing comments stated that the area should be dropped from further consideration for the following reasons: oil and gas potential, hardrock minerals, nonpublic land inholdings, dull topography, undesirable vegetation, low potential for rehabilitation, and lack of basic wilderness criteria. One comment noted that due to the wildlife management problems of the desert bighorn sheep, they could hardly be considered a supplemental value.

During the public comment period on the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983), 33 personal inputs, 13 form letters, 1 petition with 15 signatures, and 52 coupons were received indicating support for wilderness designation of the Big Hatchet Mountains WSA. The form letters, petition, and coupons listed no supporting reasons. The coupons indicated support for designation of 41,293 acres as described in the Amended Boundary Alternative. Four personal inputs opposing wilderness designation were submitted.

Several of the comments favoring wilderness designation reiterated supporting reasons mentioned in previous public review periods such as primitive recreation opportunities, scenic values, and desert bighorn sheep habitat. Other comments included: the area is a major landmark of National significance, natural, and the area has important archaeological sites from the Meso-American culture. The comment regarding cultural resources is somewhat misleading because according to BLM data, the Big Hatchet Mountains has low potential for cultural resources.

Several respondents supported the Amended Boundary Alternative because it leaves the core of the mountain range intact and is a good compromise. Other comments indicated support for wilderness designation of an area other than the 58,014-acre WSA. The acreage figures ranged from 58,000 to 65,872 acres. There were no maps or discussions of alternative boundaries included with these comments. Several respondents felt that the area designated should be larger than the amended boundary to provide a protective buffer zone around the wilderness. Several comments also indicated disagreement with the deletion of split-estate lands from the WSA.

A number of comments asserted that the Big Hatchet Mountains WSA should be designated wilderness because the area would provide primitive recreation opportunities for the growing population centers of the Southwest. Other commentators felt the area would be a valuable addition to the National Wilderness Preservation System in terms of ecosystem diversity. This type of information will be analyzed in the BLM New Mexico Statewide Environmental Impact Statement. Expanding the diversity of natural systems and features as represented by ecosystems and landforms, and opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers will be two of three factors analyzed to determine how an area would add diversity to the National Wilderness Preservation System.

Comments on the potential wilderness manageability of the Big Hatchet Mountains WSA included: discourage vehicular use of the Sheridan Canyon road, acquire or discourage development of oil and gas leases, and acquire state and private inholdings. Another comment regarding potential resource conflicts expressed the opinion that "unique and irreplaceable" areas should be protected rather than allowing oil and gas development.

Several comments made in the four personal inputs opposing wilderness designation stated that the scenery and solitude of the Big Hatchet Mountains could be protected under present BLM programs and the values protected by wilderness designation could be protected through less restrictive management. Four comments cited the area's mineral potential as a reason for opposing wilderness designation.

Other comments included: the withdrawal of 58,014 acres would extremely limit evaluation of the most prospective part of the Pedregosa Basin and closing ranch roads and jeep trails would have a negative impact on geologic field research and mineral exploration and development.

The Phelps-Dodge Corporation submitted a voluminous document including photographs and maps. Many of the comments in the document submitted by Phelps-Dodge addressed what they considered deficiencies in the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983). Only those substantive comments addressing the Big Hatchet Mountains Wilderness Analysis Report (WAR) are summarized here.

Phelps-Dodge disagreed with the discussion of impacts to wilderness values if the area were left open for mineral activities as described under the No Action/No Wilderness Alternative. The Phelps-Dodge comments stated that the discussion failed to acknowledge that "only a small fraction of these areas would even be touched by any mineral activity," and "most areas which are affected are touched only by exploration activities which are easily rehabilitated." In addition, Phelps-Dodge's comments asserted that the document should at least recognize that the extent of disturbance caused by both hard-rock and leasable mineral activities can be closely controlled by the BLM regulations applying to those activities.

Phelps-Dodge further asserted that the WAR fails to establish that the Big Hatchet Mountains WSA does not satisfy the statutory wilderness criteria and should not be recommended for wilderness designation. Reasons for their position included: the area has roads, wilderness values are impaired by inholdings, and the area's naturalness is impaired by man-made intrusions. The effects of the Sheridan Canyon road on the area's boundaries have been

clarified in Chapter I, Land Status, in response to Phelps-Dodge's comments. Phelps-Dodge's comments also expressed the opinion that the WAR reflects an inadequate analysis of the Big Hatchet Mountains mineral values. Information regarding fluorite mineralization in the area has been incorporated into this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 58,014 acres of public land within the Big Hatchet Mountains WSA would be recommended suitable for wilderness designation. (See Map 3 for the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. This added protection could be significant for the vegetation, soils, wildlife, and wildlife habitat on an area comprising approximately 23 percent of the WSA. The impacts to energy minerals also could be significant under this alternative.

Under the All Wilderness Alternative, the impacts on nonprimitive types of recreation, cultural resources, air, and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

Despite good oil and gas potential in the pediment and bolson areas surrounding the Big Hatchet Mountains WSA, there has been no exploration drilling on existing leases within the WSA and no production of energy minerals. It is assumed that after wilderness designation, existing oil and gas leases, if unexplored through drilling, would not be reissued. No new leases would be let after wilderness designation. If the present inactivity continues, oil and gas leases within the WSA would expire beginning in July 1985, and after the last lease expires in October 1986, oil and gas activities would not be permitted. If a discovery were made in an area adjacent to the WSA, energy minerals would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the oil and gas potential in the WSA. Assuming that 58,014 acres of Federal minerals within the WSA could have been leased noncompetitively for oil and gas at an annual rental fee of \$1.00 per acre, \$58,014 of annual leases (which the State of New Mexico receives 50 percent) would be lost after wilderness designation. If a discovery were made adjacent to the WSA, the economic benefits forgone would include lost expenditures and jobs in the local economy as well as royalties paid from production.

On the other hand, if oil and gas drilling is initiated and in progress on the anniversary date of a lease, a 2 year lease extension would be granted. Should any wells go into production prior to the lease expiration date, they would be allowed to continue production until reserves are exhausted. Development of the three pre-Federal Land Policy and Management Act (FLPMA) leases in the area could be allowed to impair wilderness values.

Because of the No Surface Occupancy Stipulation attached to one of the three pre-FLPMA leases in the WSA, development of this lease could result in increased operation costs. There would be no economic impact on exploration and development costs of the other two pre-FLPMA oil and gas leases because they have no special stipulations attached.

Under the All Wilderness Alternative, the impacts to energy minerals could be significant.

Based on known mineral occurrences, impacts to locatable minerals would be insignificant due to the current low demand and distance to market.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Loss of vegetation and topsoil could occur if oil and gas exploration drilling and development is initiated on the portions of the two pre-FLPMA oil and gas leases within the WSA and not covered by special stipulations (approximately 800 acres). The potential loss of vegetation and topsoil would be insignificant since the maximum acreage that could be affected (800 acres) comprises only 1.4 percent of the WSA. The actual disturbance would affect less than 800 acres.

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including Federal and state listed threatened or endangered plant species (see Chapter II, Vegetation) in approximately 98.6 percent of the WSA.

Under the All Wilderness Alternative, approximately 13,000 acres in the flats along the periphery of the WSA not covered by a leasing stipulation to protect desert bighorn sheep would be protected from surface disturbing and mechanized activities. The added protection of wilderness designation could be significant for the vegetation and soils on this 13,000 acres which comprises 23 percent of the WSA.

b. Wildlife

The desert bighorn sheep would be managed under the Big Hatchets-Alamo Huecos Habitat Management Plan (HMP). Permits for vehicular access to maintain existing wildlife waters could be authorized if there were no practical alternatives. Certain projects and monitoring studies proposed in the HMP would require State Director approval. The WMP specifically states that such projects are acceptable if they would promote perpetuation of a threatened or endangered species. Projects would be approved if the resulting changes are compatible with the preservation of wilderness character, consistent with wilderness management objectives for the area, and if the installations are the minimum necessary to accomplish the task. Should it be necessary, visitor use could be regulated under this alternative to prevent disturbance to the desert bighorn sheep.

If oil and gas exploration drilling and development is initiated on the 800 acres of the two pre-FLPMA leases within the WSA, the impacts on wildlife and wildlife habitat would not be significant since the affected acreage is minimal. The impacts on desert bighorn sheep would also be insignificant since the leases are outside the area identified as designated desert bighorn sheep habitat.

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing wildlife and wildlife habitat. This would include the Sonora mountain kingsnake, a state-endangered species which requires protection against wanton killing and unnecessary collecting (Hubbard 1979). The added protection could be significant for the wildlife and habitat on approximately 13,000 acres along the periphery of the WSA not presently covered by the protective leasing stipulation for desert bighorn sheep.

c. Visual

Visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I, which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

Oil and gas drilling exploration and development on two existing pre-FLPMA leases could degrade existing visual resources. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Generally, motorized access within the designated wilderness would not be allowed. However, permits for vehicular access to maintain the following rangeland developments not accessed by existing roads could be authorized if there were no practical alternatives: a storage tank and trough on Heard Ranch (2024) and five dirt tanks on the Hatchet Ranch (2027). Slight impacts could result to the livestock operator when monitoring livestock activity because of restricted vehicular access. The overall impacts on livestock grazing would not be significant under this alternative.

e. Realty Actions

The existing communication facility is unauthorized and would be removed. The impacts on realty actions would not be significant under this alternative.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection.

Most of the area could be managed to maintain its natural appearance and opportunities for solitude and primitive recreation. The removal of the unauthorized communication site on top of Big Hatchet Peak would slightly enhance naturalness. Periodic vehicle use on cherry-stemmed

roads and the road through Sheridan Canyon would impact solitude locally. However, outstanding opportunities for solitude would still be available in other parts of the area. The management of the desert bighorn sheep population through the HMP would further enhance the special features of the area.

Should exploration drilling for oil and gas or development be initiated on the two pre-FLPMA oil and gas leases (that are not covered by protective stipulations) along the north and west boundaries of the area, it would not be possible to manage these parcels to maintain wilderness values. Manageability problems would be especially significant in the area around U-Bar Ridge. The combination of a cherry-stemmed road, state land, split estate lands, and existing pre-FLPMA oil and gas leases in an area of good oil and gas potential increases the possibility of development. The surface disturbance and access requirements associated with development could result in significant degradation of wilderness values in this part of the WSA.

B. Amended Boundary

Under the Amended Boundary Alternative, 41,293 acres of public land within the Big Hatchet Mountains WSA would be recommended suitable for wilderness designation. (See Map 3 for the amended WSA boundary.) The amended boundary would exclude 16,721 acres of public land surrounding the Big Hatchet Mountain range. If the area within the amended boundary is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981).

Under the Amended Boundary Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. This added protection could be significant for the vegetation, soils, wildlife, and wildlife habitat on an area comprising approximately 8 percent of the area within the Amended Boundary. The impacts to energy minerals also could be significant.

Under the Amended Boundary Alternative, the impacts on nonprimitive types of recreation, cultural resources, air, and education/research in the Big Hatchet Mountains WSA were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

It is assumed that after wilderness designation, no new leasing would be allowed on the 41,293 acres of public land within the amended boundary. Any post-FLPMA leases within the amended boundary existing at the time of wilderness designation, if unexplored through drilling, would not be reissued. Possibly, directional drilling from outside the amended boundary could be utilized to allow exploration and subsequent renewal of the affected leases. Directional drilling would increase operation costs.

Assuming that 41,293 acres of Federal minerals within the WSA could have been leased noncompetitively for oil and gas at an annual rental

fee of \$1.00 per acre, a maximum of \$41,293 of annual leases (which the State of New Mexico receives 50 percent) could be lost if no leases are issued after wilderness designation.

The 16,721 acres excluded from the designated area would be available for exploration, leasing, and possibly exploration drilling and development. This acreage is located in the pediment and bolson areas of the Big Hatchet Mountains and around U-Bar Ridge. These areas have been identified as having the best potential for oil and gas in the Big Hatchet range. Approximately 7,000 acres of the 16,721-acre area available for leasing would be leased with the protective stipulation for desert bighorn sheep. Directional drilling could be required for exploration or development of leases on this 7,000 acres if it were determined that surface use or occupancy would adversely affect the desert bighorn sheep. All three of the pre-FLPMA oil and gas leases would be excluded from the area designated wilderness.

Based on existing information, it appears that the Amended Boundary Alternative would have a lower degree of conflict with energy mineral resources than the All Wilderness Alternative; however, the impacts to energy minerals could be significant under this alternative.

Impacts to locatable minerals would be insignificant due to the current low demand and distance to market.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, vegetation, and Federal and state listed threatened or endangered plant species (see Chapter II, Vegetation) within the amended boundary. Under the Amended Boundary Alternative, approximately 3,300 acres in the flats along the northeast and western edges of the WSA not covered by a leasing stipulation to protect desert bighorn sheep would be protected from surface disturbing and mechanized activities. The added protection of wilderness designation could be significant for the vegetation and soils on this 3,300 acres which comprises approximately 8 percent of the area within the Amended Boundary.

b. Wildlife

Under the Amended Boundary Alternative, management of the desert bighorn sheep, existing wildlife projects, and implementation of the Big Hatchets-Alamo Huecos HMP would be impacted as described under the All Wilderness Alternative. All but approximately 3,300 acres of the area within the amended boundary is designated desert bighorn sheep habitat.

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing wildlife and wildlife habitat within the amended boundary. The wildlife habitat protected by wilderness designation would be less varied because much of the creosote habitat would be excluded from the area recommended suitable. The added protection of wilderness designation could

be significant for the wildlife and wildlife habitat on the approximately 3,300 acres within the amended boundary not covered by the protective leasing stipulation.

c. Visual

The existing visual resources of the area within the amended boundary would be protected. An area of approximately 41,293 acres of public land encompassing the majority of the Big Hatchet Mountain range would be managed as a VRM Class I. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Impacts to livestock grazing would be the same as those described under the All Wilderness Alternative, except that most of the U-Bar allotment (2022) would be outside of the amended boundary.

e. Realty Actions

The impacts on realty actions would be the same as those described under the All Wilderness Alternative.

f. Wilderness Values

Approximately 41,293 acres in the central part of the WSA where the highest quality wilderness values and special features are concentrated would be protected through long-term Congressional designation. Approximately 16,721 acres surrounding the mountain range would not be protected by Congressional designation. Management of the excluded acreage as specified in land use plans would be subject to administrative change in the long-term. However, the exclusion of this acreage improves the manageability of the area to be designated wilderness. The manageability of the excluded area is impaired by state land, split estate lands, and pre-FLPMA oil and gas leases in an area with good oil and gas potential. The entire area within the amended boundary could be managed to retain its wilderness character. The impacts to wilderness values would be significant under the Amended Boundary Alternative.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 58,014 acres of public land in the Big Hatchet Mountains WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Under the No Action/No Wilderness Alternative, wilderness values and energy minerals could be significantly impacted. The vegetation and wildlife habitat in approximately 23 percent of the WSA also could be significantly impacted.

Under the No Action/No Wilderness Alternative, the impacts to cultural resources, air, and education/research in the Big Hatchet Mountains WSA would be clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Big Hatchet Mountains WSA would not be provided with long-term Congressional protection.

Oil and gas exploration drilling and development in the pediment and bolson areas of the Big Hatchet Mountains would degrade natural values and opportunities for solitude in these areas. The existing nonmotorized types of recreation would be impacted by the deterioration of natural values and the increased presence of man. The oil and gas leasing protective stipulation for desert bighorn sheep, covering approximately 77 percent of the area within the WSA would restrict surface uses or occupancy to protect the desert bighorn sheep. As a result, some protection of existing wilderness values would be provided indirectly.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values could be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

If oil and gas drilling exploration and development occur over the long-term, there could be a significant loss of vegetation on approximately 23 percent of the WSA area not covered by the protective stipulation for desert bighorn sheep. Where topsoil is removed for drill pad sites, soil fertility would be moderately decreased. Impacts to water resources would not be significant.

b. Wildlife

Endangered species such as the desert bighorn sheep and the Sonora mountain kingsnake would be protected from oil and gas exploration drilling and development by the protective leasing stipulation. The Big Hatchets-Alamo Huecos HMP actions would also protect bighorn sheep habitat. Other species would receive no special protection. This could be especially significant for javelina since the Big Hatchet-Alamo Hueco Mountains area represent a major portion of the habitat available in New Mexico. The impacts on javelina could include loss of habitat and restriction of movement between habitat types. Some animals would be disturbed by human presence. Additional human presence could lead to poaching.

c. Visual

Approximately 45,214 acres in the central part of the WSA would be managed as a VRM Class II. In the VRM Class II areas, minor to moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. Approximately 2,560 acres in the southwest and west parts of the

WSA would be managed as a VRM Class III. In these areas, moderate changes in the landscape as a result of management actions would be allowed as long as the visual contrast is subordinate to the existing landscape. Approximately 10,240 acres in the east and southeast parts of the WSA would be managed as a VRM Class IV. In VRM Class IV areas, significant changes in the basic elements of the landscape as a result of management activities would be permitted.

The existing Class A scenic quality in the central mountainous part of the WSA would probably be substantially maintained under management as a VRM Class II.

Oil and gas drilling and development along the pediments of the mountains and in the flats could degrade visual resources in the VRM Class III and IV areas. The impacts to visual resources would not be significant since mitigating measures could be incorporated into the authorizations for these activities to bring them into compliance with the appropriate visual management class.

d. Minerals

Under this alternative, the entire 58,014 acres within the WSA would be open to leasing. However, approximately 77 percent of the area is designated desert bighorn sheep habitat and would be leased with a protective stipulation for these values. The area included in the designated habitat generally excludes more of the mountain pediments, especially along the northeast and west-central slopes of the mountain range, than the amended boundary. Surface use or occupancy would not be allowed in the designated habitat area if it would have adverse effects on the desert bighorn sheep. Compliance with the protective stipulation could result in increased operation costs. Although the No Action/No Wilderness Alternative would have a lower degree of conflict with energy minerals than the All Wilderness or Amended Boundary Alternatives, the impacts to energy mineral resources could be significant.

There would be no significant impacts on locatable minerals exploration and development under this alternative. Mining activities would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 CFR 3809).

e. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. Grazing permittees would be allowed to use vehicles on existing trails to check livestock. Under this alternative, there would be no impacts to livestock grazing.

f. Recreation

Oil and gas development in the Big Hatchet Mountains would require the upgrading of existing access into the area as well as construction of new access. Improved access could result in a change in the types and amount of recreation use now occurring. ORV use could increase. Such increases would probably not be significant due to the remoteness of

the area, distance to population centers, and availability of similar opportunities elsewhere in the region. The impacts to motorized types of recreation would not be significant.

g. Realty Actions

The existing communication facility located on top of Big Hatchet Peak could be authorized. The impacts on realty actions under this alternative would not be significant.

APPENDIX D

BLUE CREEK WSA (NM-030-026)

I. GENERAL DESCRIPTION

A. Location

The Blue Creek Wilderness Study Area (WSA) is located 6 miles northwest of Redrock, New Mexico, north of the Gila River.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Canador Peak, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The Blue Creek WSA is characterized by a semiarid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is slightly greater than 12 inches. A wide variation in annual totals is characteristic of southern desert climates. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration. The winter precipitation is mainly from gentle-intensity frontal type storms that may produce some light snow, which seldom accumulates on the ground.

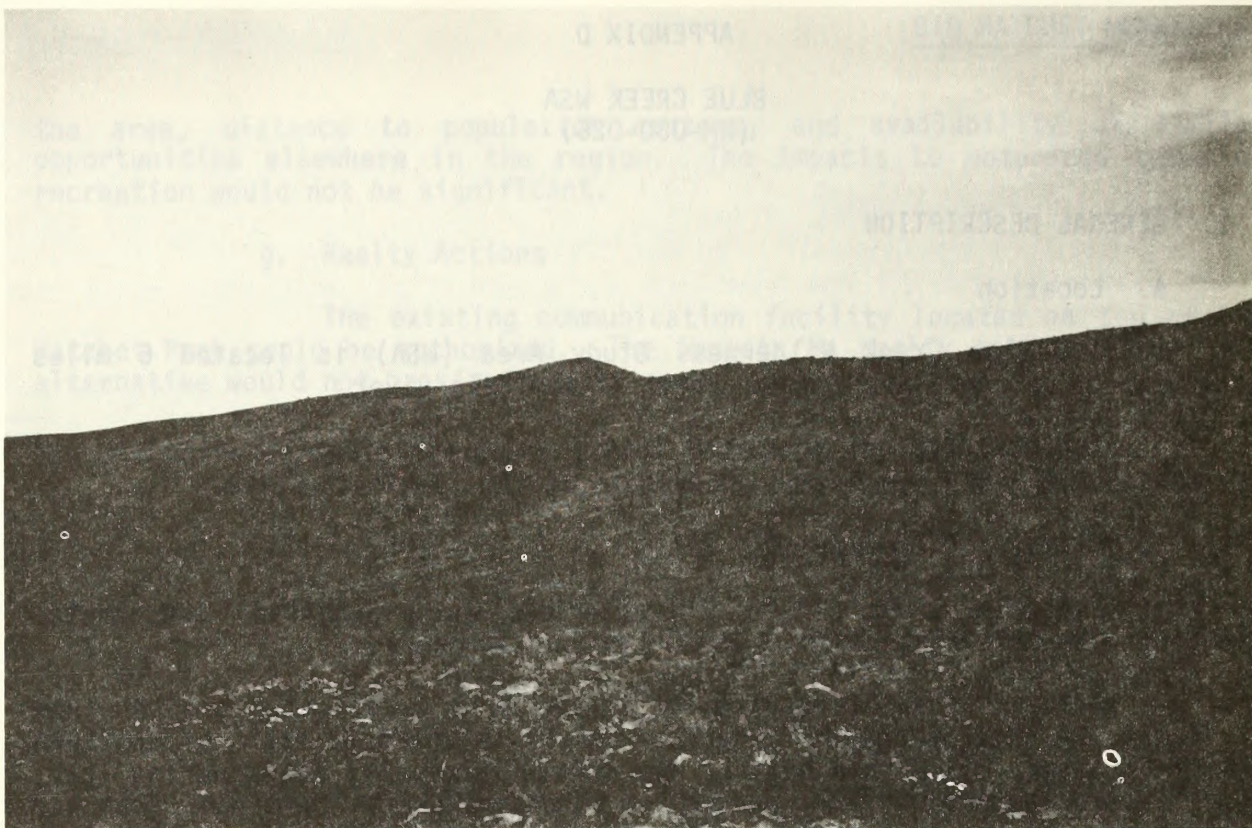
During the summer months, daytime temperatures may exceed 100°F. The average monthly maximum temperature during July, the warmest month, is in the middle 90's. In January, the coldest month, average monthly minimum temperature is in the low 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

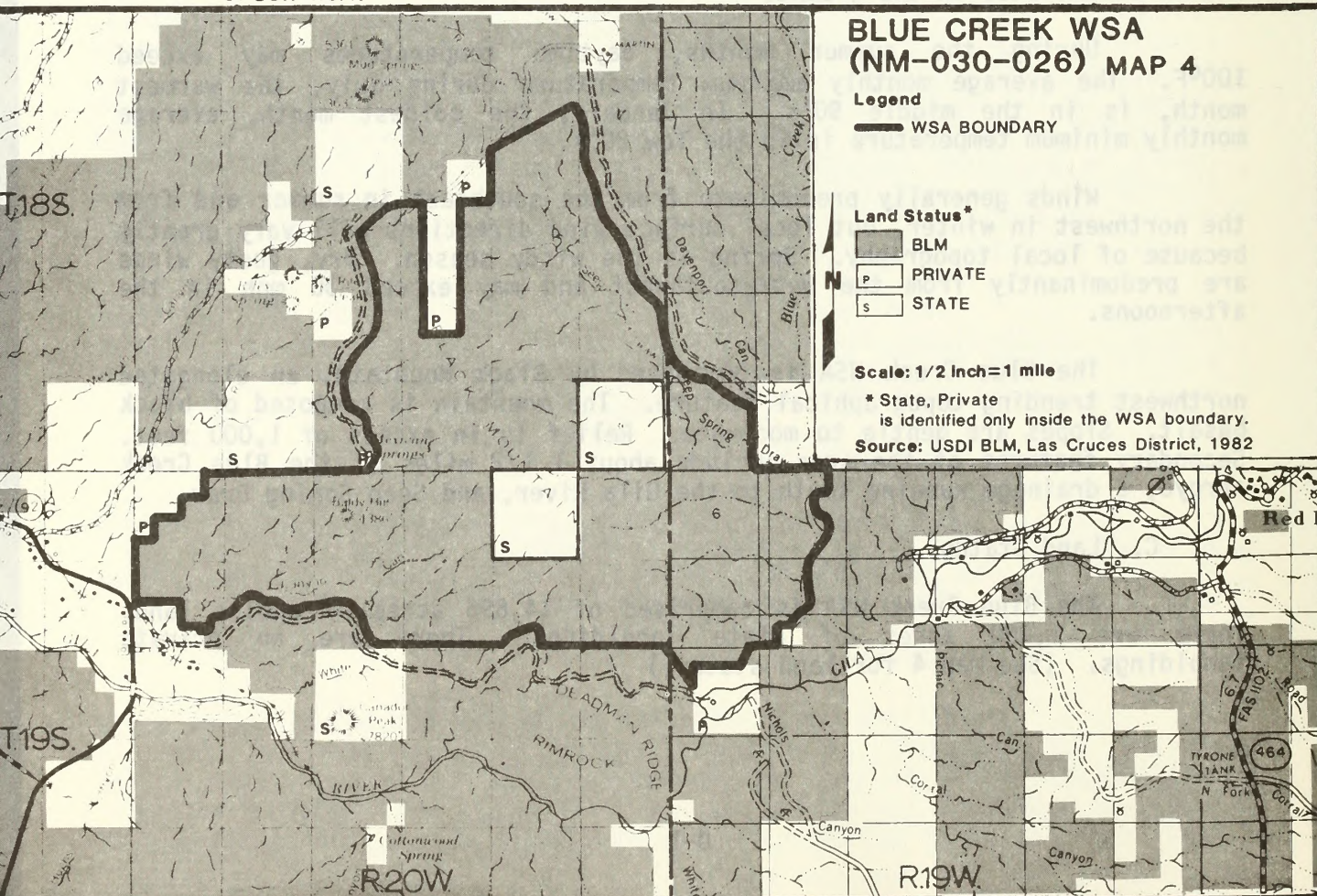
The Blue Creek WSA is dominated by Black Mountain, an elongated northwest trending topographical feature. The mountain is composed of black basalt. Slopes are gentle to moderate. Relief is in excess of 1,000 feet. Secondary features of the area include about 1 1/2 miles of the Blue Creek arroyo, a drainage running south to the Gila River, and Seep Spring Draw.

C. Land Status

The Blue Creek WSA is comprised of 14,896 acres of public land. There are 1,280 acres of state inholdings. There are no private inholdings. (See Map 4 for land status.)



Black Mountain is the major topographic feature of the Blue Creek WSA.



D. Access

Legal access to the northern portions of the WSA is provided by County Road A039 which runs northeast off of State Highway 82 approximately 1 1/4 miles east-southeast of Virden, New Mexico. County Road A030 runs east from State Highway 82 approximately 1/2 mile north of the Gila River bridge and provides legal access along the southern boundary of the WSA.

Additional physical access is provided by the roads to Mexican Springs and the X-Bar U windmill. These roads run south from County Road A039 along the western and eastern slopes of Black Mountain, respectively.

II. EXISTING RESOURCES

A. Geology

The Blue Creek WSA is within an area that is dominated by fault block mountains, extensive volcanics, and river and shallow lake deposits. The oldest exposed rocks in the WSA are Tertiary volcanics consisting of andesite flows and tuffs. Overlying the Tertiary volcanics are younger Quaternary rhyolitic and latitic tuffs interbedded with a thin sedimentary section of sandstone and conglomerates. Younger basaltic andesite forms Black Mountain.

Structurally, Black Mountain is a volcanic fault block which is uplifted along the western edge. The eastern boundary of the mountain is also a fault zone with down-thrown block to the west. Lesser faults cut across the mountain in several places. A series of faults is evident at the southern end of the mountain and another system occurs west of the mountain in the vicinity of Mexican Springs.

B. Water

The Blue Creek WSA is situated within the Gila River Basin and contributes to the larger Lower Colorado River Basin.

Surface water within the WSA drains into the Gila River through an ephemeral stream system. Blue Creek is a principal tributary to the Gila River and is perennial in the upper reaches north of the WSA. However, underground flow predominates in the lower reaches of the drainage along the southeast boundary of the WSA. Surface flow in the ephemeral streams generally occurs only as a result of summer thundershowers.

Ground water is available from the Gila Conglomerate in a narrow band on either side of Blue Creek. Lower yields are expected in the volcanic rocks and bolson fill. Ground water movement is towards the Gila River, and most recharge occurs in the stream channels during periods of flood runoff. Ground water quality in the area is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The major soil type within the Blue Creek WSA occurs on Black Mountain and is characterized by shallow, stony soils over basalt bedrock. Some areas of rock outcropping occur on the steeper slopes.

On the more level land to the north of Black Mountain, the soils are deeper and have a gravelly loam surface texture. In the Blue Creek drainage, the soils consist of stratified sands, silts, clays, and gravels. Surface textures range from silty clay loam to gravelly sands.

D. Vegetation

1. General

The vegetation and associated range sites within the Blue Creek WSA consist of four major types:

Vegetation Type	Range Sites	Federal Acres
Juniper-mixed mountain shrub	Mountain	7,128
Creosote	Malpais (lava flow)	5,262
Creosote	Breaks	2,358
Deciduous trees	Bottomland	148

Juniper trees, acacia, Mormon tea, allthorn, sumac, graythorn, creosote, mesquite, and snakeweed shrubs are the dominant vegetation on the mountain slopes of this WSA. Grass species present are gramas, tobosa, bush muhly, dropseed, curly mesquite, foxtail, and threeawns.

Creosote prevails on the malpais (lava flow) area. There are scattered juniper trees with associated shrub species such as snakeweed, mesquite, and sumac. Numerous varieties of grass species make up a large part of the vegetation on this range site. Grass species include tobosa, bush muhly, gramas, threeawns, Arizona cottontop, foxtail, and cane bluestem. This range site occurs in the southwestern part of the WSA and on the east slopes of Black Mountain.

Breaks, a highly erodable range site, occur along the Gila River. The soils within this range site are stabilized by shrub species such as creosote, snakeweed, tarbush, mesquite, mimosa, yucca, Mormon tea, rabbitbrush, cacti, and numerous grass species including tobosa, bush muhly, threeawns, black grama, fluffgrass, dropseeds, and other gramas.

Deciduous trees in the deeper soils of the bottomland site along Blue Creek include ash, cottonwood, Arizona sycamore, and willow. Some juniper trees are also present. However, tree species are few and far between with grasses being more dominant in this area. Grass species include bush muhly, green sprangletop, Arizona cottontop, sideoats grama, threeawns, and dropseeds.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP AND USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: *Ferocactus wislizenii* - southwestern barrel cactus
Status: Selected by the New Mexico State Heritage Program as a special concern element.
Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet.
Disappearing rapidly due to over collection.

E. Wildlife

The Blue Creek WSA is largely mixed shrub mountain and creosote habitat sites. There are small areas of grass, mixed shrub rolling upland, and pseudoriparian sites. The latter is in the portion of Blue Creek that runs through the WSA.

Most of these sites do not support diverse wildlife communities. A pseudoriparian site has somewhat more diversity, but the Blue Creek WSA is not an exceptionally valuable wildlife area.

Big game occur in low numbers in the WSA. There are a few mule deer and also some javelina. The latter are close to their northernmost limit of distribution in this area.

F. Visual

Black Mountain is a rounded undulating mountain surrounded by rolling foothills. Vegetation forms broken and irregular patterns which generally follow drainages. The scenic quality rating is B (moderate).

Portions of the Blue Creek WSA are in three Visual Resource Management Classes (VRM) as follows: Class II-8,156 acres, Class III-809 acres, and Class IV-5,931 acres.

G. Cultural

There are no known cultural resources in the Blue Creek WSA. The probability of significant sites in most of the WSA appears poor. However, the southeastern portion of the WSA could contain significant sites because of proximity to the Gila River and the availability of several fairly flat areas.

H. Air

Generally, the quality of air within the Blue Creek WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the Blue Creek WSA. The Minerals Management Service classified the lands in the Blue Creek WSA as having potential for oil and gas. An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (ARCO) rated the WSA as having low intermediate favorability for oil and gas. This rating indicates that some geologic characteristics are present that are favorable for the accumulation of a given resource. However, oil and gas potential is considered poor because of extensive faulting, a thin sedimentary section, exposures of Precambrian rock northwest of the WSA, and abundant igneous rocks at the surface (ARCO 1983; BLM Mineral Resource Inventory 1981). These characteristics are not considered good geologic indicators of hydrocarbon accumulations.

There are no geologic indicators that would suggest the possible occurrence of geothermal energy.

2. Non-Energy Minerals

There are no known occurrences of locatable minerals in the Blue Creek WSA. However, manganese deposits and workings are visible at the old Black Bob mine, 3/4 mile south of the WSA and at the old Consolation and Caprock Mountain mines, 2 and 4 miles southeast of the WSA, respectively. In addition, manganese oxides were found coating some rhyolite outcrops in the vicinity of Mexican Springs. These deposits may be indicative of a mineral trend which could extend into the WSA. However, no mining claims have been located within the WSA. Manganese is on the National Defense Stockpile Inventory of Critical Minerals.

An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) gave the WSA a high intermediate favorability rating for the occurrence of gold and silver. The rating indicates that a number of geologic characteristics are present that suggest the occurrence of these minerals.

B. Watershed

Within the Blue Creek WSA, water is used primarily by livestock and wildlife. Water developments that are within the WSA boundary include two dirt tanks, a pipeline system, and one well facility (see Chapter III, Livestock Grazing). The Blue Creek WSA is part of the Gila-San Francisco declared underground water basin and ground water use is administered by the New Mexico State Engineer.

Water draining the Blue Creek WSA, as both surface flow and underground flow, contributes to the Gila River system where downstream uses include irrigation, limited warm water fishery, livestock and wildlife watering, secondary contact recreation, and limited drinking water.

A watershed decision in the Gila Management Framework Plan (MFP) (BLM 1977) identifies an extensive area northwest, west, south, and southeast of Black Mountain where construction of water control structures to reduce flood and sediment damages are feasible. Approximately 1/3 of the identified area lies within the Blue Creek WSA.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Blue Creek WSA. A small area in the middle of the WSA is ungrazed by livestock due to steep slopes. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
R. Johns 1028	2,644	288	1,838	70%
R. Johns 1029	960	192	160	17%
R. Shay 1059	35,591	6,240	10,905	31%
Caprock 1078	30,028	4,884	1,993	7%
TOTAL			14,896	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
R. Shay 1059	windmill, trough, storage tank, and corral	T. 19 S., R. 19 W., Sec. 8
	2 dirt tanks	T. 18 S., R. 20 W., Sec. 23
	trough	T. 19 S., R. 19 W., Sec. 6
	trough	T. 18 S., R. 20 W., Sec. 25
	corrals	T. 18 S., R. 19 W., Sec. 31
	pipeline	2 miles
	interior fence	5 miles

Boundary Fences: Caprock (1078) and Johns (1028) 1/4 mile
 Caprock (1078) and Shay (1059) 3 1/4 miles
 Shay (1059) and Johns (1029) 1 mile
 Shay (1059) and Johns (1028) 3 1/2 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

The Final Las Cruces/Lordsburg Management Framework Plan Amendment/Environmental Impact Statement (BLM 1983) on energy minerals leasing and rangeland management proposes two erosion control dams on the R. Shay allotment (1059) in T. 18 S., R. 20 W., Section 14, for watershed protection. This location is tentative.

D. Recreation

Very little recreational use presently occurs within the WSA. Some local residents hunt deer in the WSA. Public comments indicated that some Silver City residents enjoy hiking in the area.

E. Realty Actions

A temporary State Aid Withdrawal was located within the Blue Creek WSA at the time the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983) was released. The State of New Mexico completed their land selection and the withdrawal was reviewed by the BLM. The withdrawal was revoked effective October 7, 1983.

A portion of the Blue Creek WSA is withdrawn for use in connection with the San Carlos Indian Irrigation Project. The purpose of the withdrawal is watershed protection.

In addition, segments of the WSA are withdrawn by Executive Order for powersite reservations. These lands are currently being reviewed by the U.S. Geological Survey, Water Resources Division, to determine their importance for powersite locations. Those withdrawals found not feasible will be revoked.

Duncan Valley Electric Company has two rights-of-way (ROWs) for transmission lines. One is just outside the southwest boundary of the WSA and the other forms part of the northwest boundary.

The Sunset Ditch Company was granted a ROW in 1977 for construction and maintenance of a flood control project designed to protect the existing community irrigation system from sedimentation, side drainage flooding, and debris damage. The portion of the ROW within the WSA comprises a total of 5.26 acres at two separate sites in T. 19 S., R. 20 W., Section 7, SE1/4 NW1/4 and SW1/4 NW1/4. Debris basins are located on both of these sites.

F. Wildlife

The Gila Management Framework Plan (BLM 1977) recommends fencing part of a dirt tank in T. 18 S., R. 20 W., Section 23, SE1/4, so that vegetation for food and cover could be planted inside the fence for wildlife.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

Numerous rangeland and watershed developments are located within the Blue Creek WSA. These include 2 dirt tanks, 2 corrals, 3 drinking troughs, 2 miles of pipeline, a windmill and storage tank, 13 miles of fence, and 2 debris basins associated with the Sunset Ditch flood control project. There are also approximately 4 miles of vehicle routes within the WSA. These imprints of man are concentrated on Black Mountain's northeast slopes and in Seep Springs Draw and Blue Creek and degrade the naturalness of these topographic features. Since the cumulative impacts of these developments are substantially unnoticeable when considering the entire Blue Creek WSA, this area marginally meets the required naturalness criterion.

b. Solitude

Opportunities exist for a visitor to feel isolated from the evidence of other people within the WSA. These opportunities are primarily the result of the area's large size and, to a lesser degree, the WSA's topographic diversity.

Opportunities for solitude in the southwest corner of the WSA are slightly impacted by traffic on State Highway 82 and the roads and canals which form parts of the WSA boundary.

c. Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation are considered outstanding due to the area's size and topography. These opportunities are, however, negatively impacted by land status and the location of rangeland developments.

Land ownership patterns in the WSA disrupt the continuity of Black Mountain. The northern end of Black Mountain and part of the surrounding foothills (T. 18 S., R. 20 W., part of Sections 22 and 27) are in private ownership. Two state sections, T. 19 S., R. 20 W., Section 2, and T. 18 S., R. 19 W., Section 36, are located in the center of Black Mountain. This combination of state and private lands reduces the opportunity to enjoy an unconfined recreational experience in the WSA. Users of the area are unable to hike around the base or along the ridge of Black Mountain without crossing state or private lands.

The location of rangeland developments impact each of the WSA's major topographic features which in turn affects the quality of hiking or backpacking opportunities. Visitors hiking along the eastern slopes of Black Mountain can easily see the dirt tanks located in T. 18 S., R. 20 W., Sections 23 and 36 (state inholding). When the hiker is below or north of the peak in Section 34, two of the tanks come into view. Visual intrusions

located close to the mountain reduce the feeling of being isolated or in an isolated area.

While hiking in the bottom or along the rims of the WSA's two major canyons (Blue Creek and Seep Springs Draw), visitors again see rangeland developments. Several drinking troughs and a pipeline are located in Seep Springs Draw. A windmill, storage tank, and corrals are located in the canyon of Blue Creek.

The 13 miles of grazing allotment boundary and interior pasture fences within the WSA limit opportunities for horseback riding. An interior pasture fence runs along the spine of Black Mountain, restricting movement between the east and west sides of the mountain. Fences are also located in the eastern and southwestern parts of the WSA.

Recreational opportunities are further reduced by the limited recreational resources within the WSA. The opportunities for primitive recreation are of no greater quality or diversity than recreational opportunities in any undeveloped mountainous area in the region.

2. Special Features

The Blue Creek WSA provides habitat for a Bureau sensitive plant species proposed for Federal listing and a special concern element identified by the New Mexico State Heritage Program (see Chapter II, Vegetation). These are ecological features of scientific value.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the area as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
mountain mahogany-oak scrub	7,128
creosote	7,620
northern flood plain forest	148

b. Distance from Population Centers

The WSA is approximately 3 hours driving time from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from El Paso, Texas; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Several factors affect the manageability of the Blue Creek WSA: land ownership, location of rangeland developments, existing rights-of-way, and withdrawals. The effects of these factors on manageability are assessed in terms of their relationship to the major topographic features of the WSA.

The primary topographic feature of the WSA is Black Mountain. The mountain dominates the WSA and provides the majority of opportunities for solitude and primitive recreation. Topographic features of secondary importance are Blue Creek and Seep Springs Draw. The northern end of Black Mountain is in private ownership and the center of Black Mountain and portions of Blue Creek are in state ownership.

As discussed earlier in Chapter IV, Primitive and Unconfined Recreation, land ownership patterns and the location of rangeland developments have a negative impact on the quality of the WSA's opportunities for primitive and unconfined recreation. Because of these factors, the area cannot be managed to provide a high quality recreational opportunity.

In addition, nonwilderness uses on the private land adjacent to the north boundary of the WSA or on the state land in the center of Black Mountain could degrade existing wilderness values. The most likely potential future uses on these parcels would be additional rangeland developments, which would degrade natural values and additionally impact primitive recreation opportunities.

Opportunities for solitude are somewhat impacted by the highway, roads, and canals along the southwest corner of the WSA. Solitude in this part of the WSA would be occasionally impacted when the Sunset Ditch Company maintains flood control structures in T. 19 S., R. 20 W, Section 7. The remainder of the WSA may be managed to provide opportunities for solitude.

The Duncan Valley Electric Company transmission lines have a minimal impact on manageability. These transmission lines are generally visible for about 1/2 mile inside the WSA. The lines do serve as on-the-ground identification of the area's boundary and thus may improve the BLM's ability to manage the area.

The potential uses of approximately 520 acres under powersite withdrawal in the southwest and southeast corners of the WSA do not pose a manageability problem, but rather a resource conflict. It is highly unlikely that the area would be designated wilderness before the powersite withdrawal issue is resolved. It is assumed that the issue of powersite development versus wilderness will either be settled administratively by a revocation of the withdrawals before the matter reaches Congress, or the matter will be settled by Congress as it decides whether these parcels will be dedicated to wilderness or power development.

The San Carlos Indian Irrigation Project Withdrawal also does not pose manageability problems. The management restrictions of wilderness would not conflict with the purpose of this withdrawal, which is watershed protection.

Considering all of the above factors, the BLM could not manage the Blue Creek WSA to provide high quality wilderness recreation opportunities.

The existing natural values on the public land in the WSA could not be maintained if nonwilderness uses on the adjacent private land or state land inholdings result in additional accumulation of the imprints of man. The Blue Creek WSA could not be managed as wilderness in the long-term unless, at a minimum, the state land inholdings are acquired.

V. PUBLIC INVOLVEMENT OVERVIEW

Public comments were received on the Blue Creek unit during both the New Mexico Wilderness Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The majority of the initial inventory comments opposed wilderness review of the area. The rationale cited lack of basic wilderness characteristics, poor configuration for management, and resource conflicts with minerals and grazing. The majority of comments on the 1980 WSA Proposals supported wilderness review of the area, listing the presence of basic wilderness criteria as rationale.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), 23 personal inputs were received on the Blue Creek WSA. The majority of these comments (14) favored wilderness designation of the area.

Many of the comments favoring wilderness designation listed basic wilderness values and ecological and cultural supplemental values as rationale. No discussion or new information was included to change BLM's evaluation of the quality of the area's wilderness values or the importance of the area's supplemental values. The comments regarding the area's supplemental values are misleading since existing information indicates that the only special feature or ecological value in the Blue Creek WSA is that the area may provide habitat for the night blooming cereus, a Bureau sensitive plant species proposed for Federal listing, and southwestern barrel cactus, a plant species identified by the New Mexico State Heritage Program as a special concern element (see Chapter IV, Wilderness Criteria). As discussed in Chapter II, Existing Resources, there are no known cultural sites in the WSA and the probability of finding significant sites is low.

Other pro-wilderness comments included expressions of disagreement with the use of manageability conflicts to support a nonsuitable wilderness recommendation and general statements that the Blue Creek WSA is manageable. The New Mexico Natural History Institute suggested that, "Many of the present and proposed range developments are in the extreme southern part and could be removed from the WSA by redrawing the boundary if they are a problem." The Institute did not propose any specific amended boundary. Most of the existing and proposed rangeland developments are along the northeast slopes of Black Mountain and in the Blue Creek drainage. Redrawing the WSA boundary to exclude these developments would have resulted in a convoluted boundary without improving the manageability of the area.

The New Mexico Natural History Institute also indicated that, "It is possible that inclusion in a Gila River ACEC with tough provisions barring ORVs and further range improvements, rather than wilderness designation, would suffice for this area. But because no such protection was proposed in the recent Management Framework Plan Amendment, and because of your demonstrated unwillingness to protect areas that you do designate for protection (notably Aden Lava Flow RNA) we think that recommendation as wilderness is the prudent course for Blue Creek." As noted in the Institute's comment, the Blue Creek WSA was not included in any of the Area of Critical Environmental Concern (ACEC) proposals in the Las Cruces/Lordsburg MFP Amendment/EIS (BLM 1983). For an area to be considered an ACEC, it must meet the identification criteria of relevance and importance.

"Relevant" resources or natural hazards are listed in the Federal Land Policy and Management Act's definition of an ACEC; "...historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes... ." These types of resources meet the "importance" criteria if they have, "... (1) special worth, consequence, meaning, distinctiveness or cause for concern especially when compared to any like or similar resources, and generally, (b) more than local significance." Since none of the resources in the Blue Creek WSA met either of the identification criteria, no ACEC proposals for the area were made in the Final Las Cruces/Lordsburg MFP Amendment/EIS.

Most of the nine personal inputs opposing wilderness designation for the Blue Creek WSA indicated agreement with the BLM's assessment of the area and the nonsuitable recommendation. Opposing comments also cited the potential for manganese deposits and oil and gas accumulations at depth. Information submitted by industry regarding the mineral potential of the Blue Creek WSA has been incorporated into the appropriate sections of this report.

The State of New Mexico Natural Resources Department (NMNRD) expressed, "no disagreement with the overall assessment," but listed a number of Federal candidate, state sensitive, and state plant species of concern possibly occurring in the WSA. The New Mexico State Heritage Program's "Computer Printout of Rare and Endangered Plant Species" (1982), additional updated information provided by the State Heritage Program, and information provided by the U.S. Fish and Wildlife Service were used in preparation of the threatened or endangered plant species section of the Wilderness Analysis Report (WAR). Only those plant species identified within the boundaries of the WSA or in very close proximity were discussed in the WAR. None of the plant species listed in NMNRD's comments have been identified within or adjacent to the Blue Creek WSA; therefore, they are not discussed. The NMNRD's comments also stated, "We cannot accept pseudoriparian as a suitable designation for areas with trees and streamside vegetation. Riparian is a term that comfortably encompasses the areas described in the Blue Creek WSA." Blue Creek is a perennial stream north of the WSA and is considered riparian habitat. However, the portion of Blue Creek within the WSA is an ephemeral stream with grasses being the dominant vegetation rather than tree species. This portion of Blue Creek is a pseudoriparian habitat.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 14,896 acres of public land within the Blue Creek WSA would be recommended suitable for wilderness designation. (See Map 4 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area, and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, the impacts to wilderness values would be significant since the BLM could not manage the area in the long-term to provide a quality wilderness experience. Impacts to air quality, nonprimitive types of recreation, and cultural resources were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There has been no energy minerals production within the WSA. Because the potential appears to be low, impacts to the energy minerals industry would be minor in the short-term. The economic benefits forgone to the energy minerals industry also would be minimal in the short-term.

It is assumed that exploration and leasing for energy minerals would not be allowed under the mineral leasing laws after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential or for development and production. The energy minerals industry could be affected in the long-term.

It is assumed that after wilderness designation, prospecting, exploration, and location of mining claims would not be allowed. The Blue Creek WSA is theoretically favorable for the occurrence of manganese, a strategic mineral. Since there have been no discoveries and there is currently no activity, economic benefits forgone to the minerals industry would be minimal in the short-term. The minerals industry could be affected in the long-term.

Based on existing information, it appears that wilderness designation would have a low degree or insignificant conflict with mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The water control structures recommended in the Gila Management Framework Plan (MFP) (BLM 1977) for watershed improvement and the erosion control structures proposed in the Las Cruces/Lordsburg MFP Amendment/EIS (BLM 1983) could be authorized only if (1) they could be constructed in such a way that wilderness values would not be impaired and

(2) if approved by the BLM Director. These projects would reduce flood and sediment damage in the individual watersheds where constructed and also downstream by reducing the volume and peak rate of surface runoff from small ephemeral tributaries of Blue Creek and the Gila River. Although the impacts would be significant for the individual watersheds, the structures would be insignificant in reducing overall flood and sediment damage downstream on the Gila River. Vegetation loss and soil disturbances resulting from the initial construction of the structures would be outweighed in the long-term by an improvement in vegetative cover and soil stabilization. If the BLM Director does not approve the projects as required by the WMP, the benefits to the individual watersheds would not be realized.

Generally, the restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including a Bureau sensitive plant species proposed for Federal listing and a plant species identified by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation). Since existing and proposed BLM plans do not identify potential uses or activities that could result in extensive surface disturbance, the overall impact of the additional protection for water, soils, and vegetation provided by wilderness designation is insignificant.

b. Wildlife

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide protection for wildlife habitat. The restriction of vehicular access would reduce the potential for harassment and poaching of wildlife and could reduce hunting pressure in the area.

Since no major surface disturbing activities are proposed in existing BLM plans and existing vehicle use is low, the added protection as a result of wilderness designation would not be significantly different from nonwilderness management.

c. Visual

Although not significant, existing visual resources would be protected since the area would be managed under the most restrictive Visual Resource Management Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted under the Class I designation.

d. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be permitted. However, if there were no practical alternatives, permits for vehicular access could be authorized for maintenance of the windmill, storage tank, 3 troughs, 2 corrals, 2 dirt tanks, and 2 miles of pipeline on the Shay allotment (1059) within the WSA.

Checking cattle with vehicles in the WSA would not be allowed. The permittees would be allowed to check cattle either on horseback or foot. This could result in less effective livestock management and an impact on costs of the operation, depending on the use normally made of the trails by motor vehicles. Overall, impacts to livestock operators would be insignificant and would consist primarily of inconveniences due to restricted vehicular access.

e. Realty Actions

Under this alternative, it is assumed that the powersite withdrawals would be revoked before the Blue Creek area is designated wilderness. Without consideration of powersite suitability, the impacts of revoking the withdrawals within the WSA would probably not be significant since the approximately 520 acres within the WSA represents less than 5 percent of the total acreage withdrawn for powersites between Redrock and Virden, New Mexico.

f. Wilderness Values

Wilderness designation would provide the existing wilderness values present in the area with long-term Congressional protection. The area would be specifically managed to maintain the existing wilderness values. However, several factors would impact the capability of the BLM to manage the Blue Creek WSA as wilderness in the long-term. Nonwilderness uses on the private land adjacent to the north boundary of the WSA or on the state land in the center of Black Mountain could degrade existing natural values through the accumulation of imprints of man. The impacts could be minimal to major depending on the location, type, and extent of development and access requirements. In addition, the non-Federal lands and location of rangeland developments affect the capability of managing the area to provide high quality recreational opportunities. Wilderness recreationists are unable to hike along the ridge of Black Mountain or around the base of the mountain without crossing non-Federal lands and viewing rangeland developments.

Since the BLM could not manage the Blue Creek WSA in the long-term to provide a quality wilderness experience, the impacts to wilderness values under this alternative would be significant.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 14,896 acres of public land within the Blue Creek WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values could be significant since management of the area would be subject to administrative change in the long-term. The impacts to air quality, cultural resources, realty actions, and nonprimitive types of recreation were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

The wilderness values of the Blue Creek area would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

The construction of the water control structures proposed in the Gila MFP (BLM 1977) and the erosion control structures proposed in the Las Cruces/Lordsburg MFP Amendment/EIS (BLM 1983) for watershed protection would degrade the quality of the area's naturalness and opportunities for solitude and primitive recreation because of the cumulative effects of additional man-made improvements in the area. The water control structures would be located in the southwest part of the WSA which is already impacted by fences, jeep trails, and the Sunset Ditch Company's flood control structures. The two erosion control structures would be constructed in the northeast part of the WSA. The east slopes of Black Mountain are already impacted by rangeland developments.

Powersite facilities could also degrade wilderness values in the southeast and southwest parts of the WSA. The impacts could be minimal to major depending on the location, type, and extent of development and access requirements.

The impacts to wilderness values under this alternative could be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under this alternative, construction of watershed improvement projects (Gila MFP [1977] and Las Cruces/Lordsburg MFP Amendment/EIS [1983]) would reduce flood and sediment damage as described under the All Wilderness Alternative. However, the impacts could be more significant for the individual watersheds under this alternative since location of the structures would not be constrained by wilderness considerations. Vegetation loss and soil disturbances resulting from the initial construction of the structures would be outweighed in the long-term by an improvement in vegetative cover and soil stabilization.

The structures would be insignificant in reducing overall flood and sediment damage downstream on the Gila River.

b. Wildlife

Impacts to wildlife would be very minimal. A slight amount of additional surface disturbance might occur, and this would destroy some wildlife habitat. These impacts would not be significant.

c. Visual

Approximately 8,156 acres in the southwestern part of the WSA would be managed as a VRM Class II. In VRM Class II areas, minor to

moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. Approximately 809 acres in the southeast part of the WSA along the Blue Creek drainage would be managed as a VRM Class III. In this area, moderate changes in the landscape as a result of management actions would be allowed as long as the visual contrast is subordinate to the existing landscape. In the northeast part of the WSA, approximately 5,931 acres would be managed as a VRM Class IV. Significant changes in the basic elements of the landscape as a result of management activities would be permitted in this part of the area.

Since existing and proposed BLM plans do not identify any activities which would significantly impair visual resources, the existing Class B scenic quality would be substantially maintained in the short-term. Although degradation of the existing visual resources in the VRM Class III and IV areas could occur in the long-term, based on present predictions of future uses and activities in the area, impacts would not be significant.

d. Minerals

There would be no impact on minerals exploration and development under this alternative. Mining activities would be regulated to prevent unnecessary and undue degradation of the land. No economic benefits would be lost under this alternative.

e. Livestock Grazing

All rangeland developments would be checked and maintained on a convenience basis using motorized equipment. The permittees would be allowed to use vehicles as at present to check cattle. There would be no impacts to livestock grazing.

APPENDIX E

CEDAR MOUNTAINS WSA (NM-030-042)

I. GENERAL DESCRIPTION

A. Location

The Cedar Mountains Wilderness Study Area (WSA) is located in southwestern Luna county. The WSA is approximately 20 miles southwest of Deming, New Mexico.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Hat Top Mountain, Flying W Mountain, and Gage, SE quadrangles. All of these are New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

The Cedar Mountains WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is slightly above 9 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of arid climates. More than half of the total annual precipitation occurs from July to September. Rainfall during these months usually is from convective thundershowers that are commonly brief and intense.

During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. Average monthly maximum temperature during July, the warmest month, is in the upper 90's. In January, the coldest month, average monthly minimum temperature is in the upper 20's. Slightly cooler temperatures can be expected throughout the year at higher elevations.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

The Cedar Mountains WSA contains a 4-mile segment of the Cedar Mountain Range. The Cedar Mountains are essentially a northwest-southeast trending ridge with scattered peaks. Drainages are steep and rocky at their origins along the mountain ridge. The lower elevations are characterized by more rolling, rounded hills and broader drainages.

Major topographic features within the WSA include Old Baldy Peak, Rock Hole Canyon, and the north half of Flying W Mountain. Flying W Mountain, at 6,217 feet, is the highest point in the Cedar Mountain Range.

C. Land Status

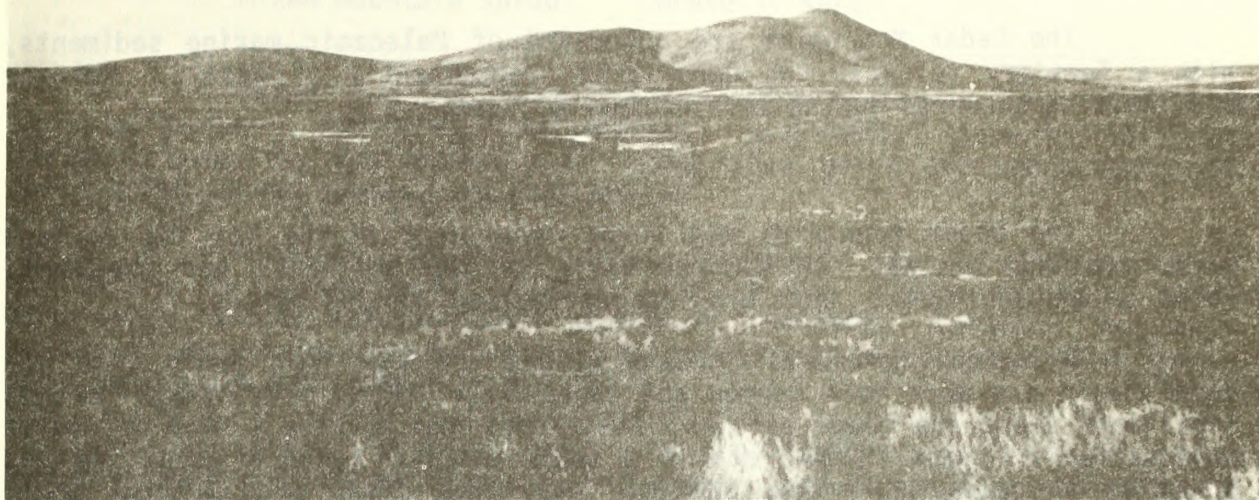
The WSA contains 14,911 acres of public land. There are no state or private lands within the WSA boundary. (See Map 5 for land status within the WSA boundary.)

D. Access

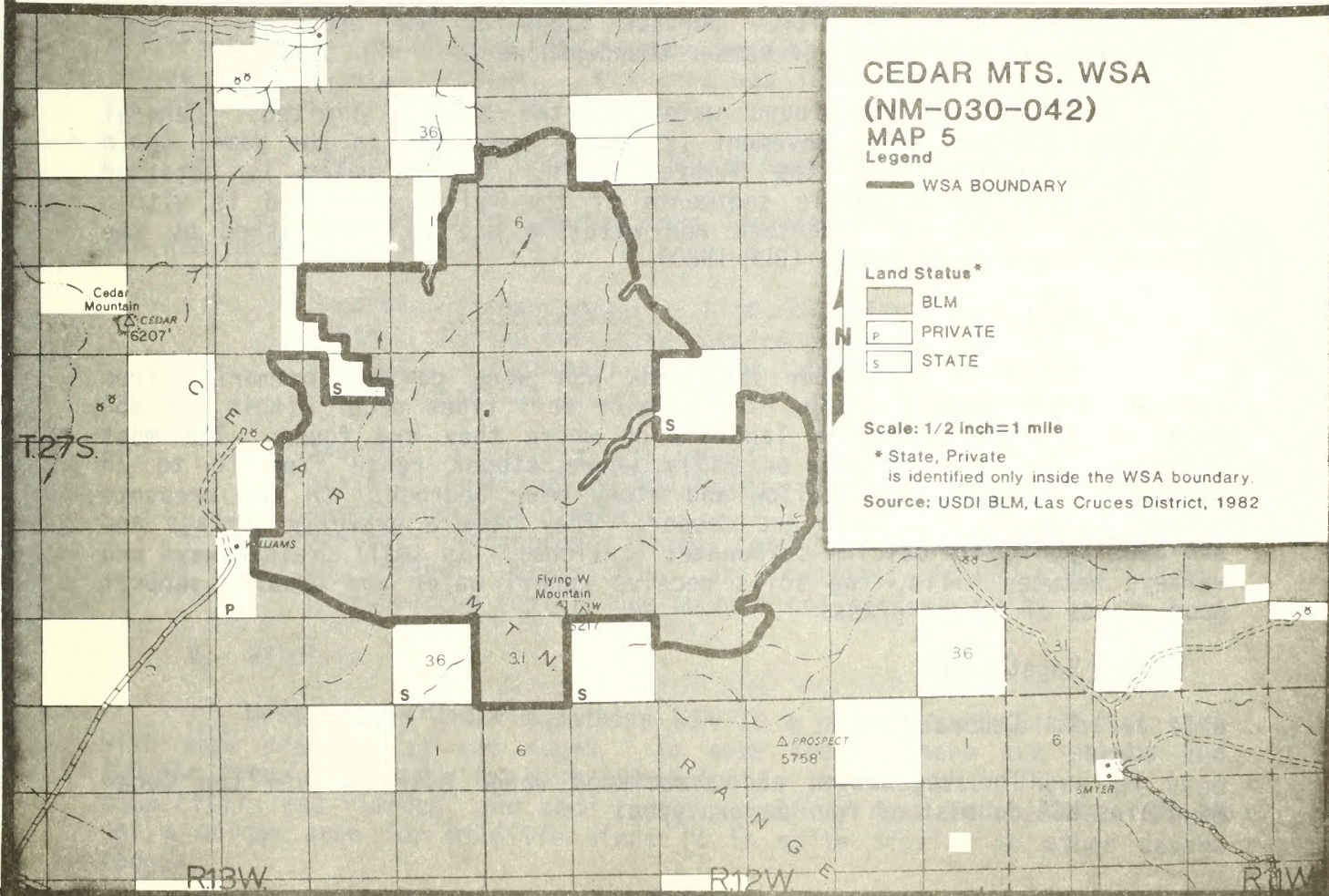
There is no legal access to the Cedar Mountains WSA. Physical access is available by way of ranch roads on the north, east, and west boundaries.

Access to the north and east boundaries is via Interstate Highway 10 to the Gage exit, about 19 miles west of Deming, then south on County Road C020 for approximately 5 miles to County Road C019. After approximately 9 miles southwest on C019, a ranch road branches off to the south. This road leads into a network of ranch roads that provide physical access to the north and east boundaries of the WSA.

Access to the west boundary of the WSA is via County Road C001 that runs northwest from State Highway 9. The county maintained road terminates on private land at the Flying W ranch headquarters. The WSA boundary is 1/4-mile west of the headquarters across private land.



Cedar Mountains WSA.



II. EXISTING RESOURCES

A. Geology

The Cedar Mountains WSA is located within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments.

The Cedar Mountains are comprised of Paleozoic marine sediments, with a Tertiary volcanic cap consisting predominantly of basalt. Folding and faulting occurred during late Cretaceous time.

B. Water

The Cedar Mountains WSA forms part of a divide for two surface water drainage basins; the Mimbres Basin to the northeast and the Wamei Basin to the southwest. Both are noncontributing, closed basins.

Principal ephemeral streams within the WSA that drain into the Wamei Basin are Rock Hole Canyon and Wamei Draw. Rock Hole Canyon becomes indistinct along the lower alluvial fan slopes and follows a shallow course southwestward. Wamei Draw retains a more distinct channel that becomes broad as it heads south into Mexico. Gap Draw, along with several small tributaries, is the principal ephemeral stream that drains into the Mimbres Basin from the WSA. The drainage heads northwest and flattens out into a broad channel past Gap Hill. Surface flows of the ephemeral streams generally occur as a result of summer thundershowers.

Information on ground water in the WSA is limited. General direction of ground water movement is to the southwest in the Wamei Basin and to the northeast in the Mimbres Basin. Ground water is obtained primarily from the permeable sediments of the valley fill and is within recommended limits for livestock and wildlife use as established by the National Academy of Sciences (BLM 1980).

C. Soils

Soils of the Cedar Mountains WSA were derived primarily from igneous parent bedrock types. Three major soil types occur within the WSA depending on the particular landform on which they are found. The most prevalent soil type occurs on hills where slopes range from 10 to 75 percent. The soils are shallow and stony over bedrock. On the creosote covered "bajada", the soils are deeper. They have a gravelly surface and are usually high in calcium carbonates (caliche). In small drainageways and valleys between hills, the soils receive runoff water and usually support good stands of tobosa grass.

D. Vegetation

1. General

The vegetation and associated range sites within the Cedar Mountains WSA consist of four major types:

Vegetation Type	Range Site	Federal Acres
Mixed mountain shrub	Mountains	6,099
Creosote	Gravelly	7,599
Tobosa	Draws (swales)	1,206
Mixed mountain shrub	Gravelly sand	7

Mixed mountain shrub and tree species in the Cedar Mountains include juniper, hackberry, Apacheplume, snakeweed, fourwing saltbush, tarbush, mesquite, and Mormon tea. Associated grass species are tobosa, black grama, other gramas, and bush muhly.

Creosote gravelly areas surround the mountain region. Vegetation is predominantly shrubs with a few grass species. Other associated shrub species are snakeweed, mariola, tarbush, mesquite, allthorn, and yucca. Grass species include tobosa, black grama, fluffgrass, bush muhly, and burro grass.

Tobosa and burro grass are the dominant species in the draw (swale) sites. Invading shrub species are tarbush, mesquite, and allthorn. Other shrub species include Mormon tea and yucca.

Oak brush, sumac, juniper, agave, and cacti are the most prevalent woody species in the sandy arroyos of the mountain canyons. Tobosa grass is also present. This area was identified as special habitat for wildlife.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

Most of the Cedar Mountains WSA is a grass mountain habitat site with some creosote at the edges. In some areas, there are shrubs and juniper trees which make for more variation in the habitat. There are also some cliffs and rimrock, and some raptors probably nest in the WSA. It is not a unique area for wildlife since it is quite similar to other desert ranges.

The New Mexico Department of Game and Fish has delineated the Cedar Mountains as a deer herd unit area. They estimate that there are now less than half a deer per section and optimum numbers are half a deer per section. Some javelina also are found in the WSA.

F. Visual

The Cedar Mountains have a Class B (moderate) scenic quality rating. The landform of the Cedar Mountains consists of rolling, conical hills. Colors are dark shades of reddish brown and gray with a grainy-crumbly texture. Vegetation consists of light brown and yellow grasses spotted with dark green juniper and desert shrubs.

The WSA is within a Visual Resource Management Class II area.

G. Cultural

There is a large Animas phase pueblo in the Cedar Mountains WSA which has been partially destroyed through bulldozing; however, a similar site remains almost undisturbed. Because almost none of this WSA has been surveyed, it is difficult to evaluate the significance of the cultural resources in this area. The known sites have a high degree of significance because of their condition, the rarity of Animas phase sites, and the large amount of scientific information contained in them. These sites would probably be eligible for the National Register of Historic Places.

H. Air

Generally, the quality of air within the Cedar Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Cedar Mountains WSA. There are currently 11 oil and gas lease applications in the areas adjacent to the WSA.

Potentially favorable petroleum reservoir beds are present in the comparatively thick sedimentary section in the area of the Cedar Mountains. This potential is associated with the productive Pedregosa Basin in northern Mexico. However, the potential for hydrocarbon accumulations is more favorable in the adjacent valleys than in the Cedar Mountains WSA. An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) rated the WSA as having a low intermediate favorability for oil and gas. This rating means that some geologic characteristics are present that are favorable for the accumulation of a given resource. The Cedar Mountains WSA has lower potential than adjacent valleys because of its location in an area with many igneous rocks at the surface which are not considered good geologic indicators of hydrocarbon accumulations. The Energy and Mineral Resource Evaluation gave the area a low intermediate favorability rating for uranium.

There are no geologic indicators that would suggest the possible occurrence of geothermal energy.

2. Non-Energy Minerals

Although there are no surface indicators, the geology of the Cedar Mountains WSA is favorable for the occurrence of locatable minerals. Mineralized areas north and south of the WSA indicate the possible occurrence of a mineralized zone. An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) gave the WSA a high intermediate favorability rating for the occurrence of copper, molybdenum, gold, silver, lead, and zinc, indicating that a number of geologic characteristics are present that suggest the occurrence of these minerals.

B. Watershed

Within the Cedar Mountains WSA, water is used primarily by livestock and wildlife. Water developments that are within the WSA boundary include one dirt tank on a small ephemeral stream and one water spreader system on Gap Draw (see Chapter III, Livestock Grazing). Additionally, several well facilities and dirt tanks are located just outside the WSA boundary that are for livestock watering.

A portion of the Cedar Mountains WSA is within the Mimbres Valley declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of five grazing allotments are within the Cedar Mountains WSA. Some areas within the Cedar Mountain WSA are inaccessible to livestock due to the steep mountain slopes and distance from water developments. Licensed grazing use on public land includes cattle and a few horses. Three allotments, Burdick Hills (2013), Mashed O (2034), and Smyer (2046), are under implemented Allotment Management Plans (AMPs).

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Z. Clopton 2006	45,115	7,788	214	.5%
Burdick Hills 2013	78,498	12,202	5,606	7%
Flying W Ranch 2017	20,917	3,612	4,134	20%
Mashed O 2034	70,340	12,228	4,187	6%
W. and M. Smyer 2046	13,511	2,364	770	6%
TOTAL			14,911	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Flying W Ranch 2017	interior fence	3/4 mile
Mashed O 2034	water spreader dirt tank	T. 27 S., R. 12 W., Sec. 22 T. 27 S., R. 12 W., Sec. 20

Boundary Fences:

Clopton 2006 and Flying W Ranch 2017	1 miles
Mashed O 2034 and Burdick Hills 2013	3 miles
Mashed O 2034 and Flying W Ranch 2017	2 miles
Flying W Ranch 2017 and Burdick Hills 2013	2 miles
Mashed O 2034 and Smyer 2046	2 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

The Final Las Cruces/Lordsburg Management Framework Plan Amendment/Environmental Impact Statement (BLM 1983) on energy minerals leasing and rangeland management proposes a 1/2 mile of pipeline on the Smyer allotment (2046) in T. 27 S., R. 12 W., Sections 28 and 33. The

location of the proposed rangeland development is tentative. The purpose of the proposed pipeline is not to accommodate increased livestock numbers, but to redistribute grazing use over the Smyer allotment and relieve grazing pressure around existing livestock waters. The rangeland condition on presently heavily grazed areas of the allotment would show improvement in the long-term.

D. Recreation

The predominant recreation use of the WSA is hunting for deer, dove, quail, and javelina. There is probably a certain amount of driving for pleasure and sightseeing around the WSA. Primitive recreation opportunities are discussed in Chapter IV, Primitive and Unconfined Recreation.

E. Realty Actions

A temporary State Aid Withdrawal was located within the Cedar Mountains WSA. The State of New Mexico completed their land selection and the withdrawal was reviewed by the BLM. The withdrawal was revoked effective October 7, 1983.

F. Wildlife

One quail guzzler is located in the Cedar Mountains WSA in T. 27 S., R. 12 W., Section 27, NE1/4 NW1/4.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Cedar Mountains WSA generally appears natural. Imprints of man associated with the WSA include: 7 vehicle trails, approximately 10 miles of fences, 2 cherry-stemmed windmills, and a cherry-stemmed road and pipeline.

Approximately 10 miles of the seven vehicle trails are within the WSA boundary in the northwest, southwest, and east parts of the WSA. They generally follow drainages and are topographically screened. Both the vehicle trails and fences have insignificant impacts on naturalness.

Both of the windmills are cherry-stemmed less than 1/4 mile into the WSA. Due to their locations just outside the boundaries of the WSA, they are substantially unnoticeable. In addition, the windmill just outside the northeast boundary is located on the north side of a hill and as a result, is topographically screened from most of the WSA.

A cherry-stemmed road and pipeline protrude about 1 mile into the east side of the WSA. This rangeland development impacts naturalness locally, but does not negatively impact the naturalness of the entire WSA.

b. Solitude

The Cedar Mountains WSA contains outstanding opportunities for solitude. The numerous small canyons provide topographic screening in the mountainous portion of the WSA. In the northern part of the WSA, great sweeping vistas of rolling, grass covered hills enhance the feeling of solitude and remoteness from others.

c. Primitive and Unconfined Recreation

Primitive recreation opportunities in the Cedar Mountains WSA include hunting, hiking, and backpacking. There are few rockclimbing opportunities and horseback riding is somewhat limited due to the grazing allotment boundary fences within the WSA. Opportunities for backpacking are limited by the size of the WSA. During the intensive inventory phase of the wilderness review, opportunities for primitive recreation were judged as not being outstanding either in terms of diversity or quality of the recreation experiences available in the WSA.

2. Special Features

The Cedar Mountains WSA contains special ecological and cultural features of scientific and educational value. The Cedar Mountains WSA provides habitat for the night blooming cereus, a Bureau sensitive plant species proposed for Federal listing and southwestern barrel cactus, a plant

species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation). The cultural features of this area consist of Animas phase sites that would probably be eligible for the National Register of Historic Places (see Chapter II, Cultural).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Cedar Mountains WSA as being in the Chihuahuan Desert Province. The potential natural vegetation is grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
mountain mahogany oak scrub	6,106
creosote	7,599
grama-tobosa shrubsteppe	1,206

b. Distance from Population Centers

The Cedar Mountains WSA is approximately 3 hours driving time from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from El Paso, Texas; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Two factors complicate the ability of the Cedar Mountains to be managed as wilderness: land status and the cherry-stemmed road and pipeline southwest of Bob's Tank in T. 27 S., R. 12 W., Section 20. However, both of these factors are minor problems.

The state land adjacent to the northwest boundary is surrounded by the WSA on the north, east, and south. State land also borders the WSA on the southwest and southeast. Nonconforming or nonwilderness uses on the state land could degrade wilderness values in the the WSA.

Continued vehicle use on the cherry-stemmed road past Bob's Tank could create impacts on the naturalness and solitude in the east-central part of the WSA.

Since these are minor manageability conflicts, the Cedar Mountains WSA could be managed to preserve its existing wilderness character.

V. PUBLIC INVOLVEMENT OVERVIEW

Numerous public inputs were received on the Cedar Mountains WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The recommendation for the Cedar Mountains in the March 1980 WSA Proposals was among the ten most commented-on recommendations in the state. Maps of rangeland developments, maps of proposed WSA boundaries, and photographs were submitted with some of the comments.

In the March 1980 WSA Proposals, the BLM proposed to drop the entire Cedar Mountains intensive inventory unit. However, after the start of the public comment period, discrepancies were discovered in the intensive inventory information on the WSA. Due to these discrepancies, a major reevaluation of the area's wilderness characteristics was necessary prior to making a final WSA decision. Four roadless areas greater than 5,000 acres were identified in the reevaluation of the original intensive inventory unit.

During the reevaluation of this area, grazing permittees and other members of the public were concerned about the accuracy of the inventory data. Field trips made in conjunction with the permittees and interested individuals are documented in the Permanent Documentation File in the Las Cruces District Office.

Many of the comments on the WSA Proposals opposed WSA status for the Cedar Mountains. The commentators were upset that the area was being reevaluated for wilderness characteristics. Opposing comments cited rangeland developments, lack of outstanding opportunities for solitude or recreation, and conflicts with the ranching business and rockhounds. Comments favoring WSA status for this area stated that a portion of the unit has basic wilderness values and cited the supplemental values of a biological ecotone along the Mexican border.

After consideration of public comments and the corrected intensive inventory data, the BLM designated part of one of the four roadless areas a WSA (16,680 acres) in the November 1980 New Mexico Wilderness Study Area Decisions. The remaining three roadless areas were released from further wilderness review. The BLM's November 1980 decision to release the roadless area west of the WSA and an area contiguous to the designated WSA was subsequently protested by the Desert Wilderness Coalition. The State Director denied the protest and the Desert Wilderness Coalition appealed to the Interior Board of Land Appeals (IBLA). In their decision of December 5, 1983 (IBLA-81-1068), the IBLA affirmed the decision dropping the roadless area to the west, but directed BLM to reconsider including within the designated WSA the contiguous acreage south of the WSA and north of State Highway 9.

The BLM's November 1980 decision designating the 16,680-acre WSA was also protested by Zay Clopton, a grazing permittee in the area. Mr. Clopton protested the inclusion of approximately 1,900 acres in T. 28 S., R. 12 W., Sections 5, 6, 7, and 8, and T. 28 S., R. 13 W., Sections 12 and 13, in the WSA. The State Director resolved Mr. Clopton's protest by relocating the southern boundary of the WSA on the section line between T. 27 S., R. 12 W., Section 31, and T. 28 S., R. 12 W., Section 6.

The information regarding the boundary change as a result of Mr. Clopton's protest was not transmitted to the IBLA. As a result, the area specified by the IBLA for reconsideration and possible addition to the WSA was not contiguous to the designated WSA. The WSA and area described by the IBLA only shared a common section corner. In response to IBLA's ruling, BLM reinventoried all contiguous roadless acreage of the presently designated WSA. The reinventory indicated that the area does not meet the requisite wilderness characteristics and the acreage was released from further review by the State Director.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), 25 personal inputs were received on the Cedar Mountains WSA. Most of these inputs favored wilderness designation of the area. Comments favoring wilderness designation fell into 3 major categories of criticism of BLM's evaluation of the area: (1) wilderness values; (2) manageability; and (3) ecological values.

Most of the comments listed the area's wilderness values as reasons for favoring wilderness designation for the area. However, these comments were generally flat statements about the area having the requisite wilderness characteristics. No new perspectives regarding the quality of the area's characteristics were proffered to change the BLM's evaluation of this WSA.

Several comments indicated support for wilderness designation of an area greater than the 14,911-acre WSA. The acreage figures cited ranged from 40,000 to 95,000 acres. The size of the Cedar Mountains WSA was determined by land status and the location of roads. The BLM did not study acreage outside the designated WSA, nor does the Wilderness Study Policy (BLM 1982) contain provisions for addition of such vast acreages to a WSA.

In addition to the general comment that the Cedar Mountains WSA is manageable as wilderness, several commentators suggested solutions to manageability conflicts such as land exchanges for contiguous state land, adopting a long-term plan for eliminating existing fences, and closure of cherry-stemmed roads.

Fences within the Cedar Mountains WSA consist of 10 miles of grazing allotment boundary fences and a 3/4 mile interior fence. In reference to the possibility of phasing out such fencing over the long-term, Section 4(d)(4)(2) of the Wilderness Act provides for continued livestock grazing where established prior to designating an area as wilderness. An excerpt from House Report 96-1126 is reprinted verbatim in the BLM's Wilderness Management Policy (1981) and provides further clarification on this subject: "...the general rule of thumb on grazing management in wilderness should be that activities or facilities established prior to the date of an area's designation should be allowed to remain in place... ."

BLM did not consider the closure of cherry-stemmed roads to resolve manageability conflicts because of guidance provided by BLM Washington Office Memorandum No. 82-176. This memorandum provides guidance on the application of the manageability criterion in wilderness studies and states, "If the cherry-stem does not provide access to a ...grazing facility...you

may consider a road closure." The cherry-stemmed roads into the Cedar Mountains WSA provide access to grazing facilities. BLM did not consider restricting access on the cherry-stemmed roads because they do not present major manageability concerns.

Comments submitted by the State of New Mexico Natural Resources Department (NMNRD) indicated inadequacies in the plant data presented in the Wilderness Analysis Report (WAR) and listed a number of State sensitive and Federal candidate plant species possibly occurring in the WSA. The New Mexico State Heritage Program's "Computer Printout of Rare and Endangered Plant Species" (1982), additional updated information provided by the State Heritage Program, and information provided by the U.S. Fish and Wildlife Service were used in preparation of the threatened or endangered plant species section of the WAR. Only those plant species identified within the boundaries or in very close proximity to the WSA were discussed. None of the five species listed in NMNRD's comments have been identified within the Cedar Mountains; therefore, these species were not incorporated into the vegetation section of this report.

The NMNRD's comments also indicated that there is a high probability of finding Mexican peripheral plant species and communities in the WSA as well as peripheral animal species from Mexico. The data used in preparation of the vegetation section of the WAR was derived from the BLM Range Survey completed in 1981. Although the survey was not designed to identify rare and unusual plant species, it did provide mechanisms for identification of unusual plant communities of at least 160 acres. However, no unusual plant communities were identified. Similarly, the wildlife section of the WAR was prepared using data from the Integrated Habitat Inventory and Classification System Survey completed in 1981. Again, no unusual peripheral Mexican fauna were identified.

Comments opposing wilderness designation for the area either indicated agreement with the BLM's assessment and recommended action for the WSA or listed potential mineral resources as the reason for opposing wilderness designation. Information submitted by industry regarding the mineral potential of the Cedar Mountains WSA has been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 14,911 acres of public land within the Cedar Mountains WSA would be recommended suitable for wilderness designation. (See Map 5 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (1981).

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. The impacts on air, nonprimitive types of recreation, and realty actions in the Cedar Mountains WSA were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There has been no energy minerals production within the WSA. Because the potential appears to be low, impacts to the energy minerals industry would be minor in the short-term. However, it is assumed that exploration and leasing for energy minerals would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential or for production and development. Therefore, the energy minerals industry could be affected in the long-term.

There are no known occurrences of strategic or critical minerals within the WSA although the potential is fair for locatables. Since there have been no discoveries and there is currently no activity, the loss of economic benefits to locatable minerals operations would be minimal in the short-term. It is assumed that after wilderness designation, prospecting, exploration, and location of mining claims would not be allowed. Therefore, the minerals industry could be affected in the long-term.

Based on existing information, it appears that wilderness designation would have a low degree of conflict with mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The proposed 1/2 mile of pipeline could be constructed on the Smyer allotment (2046) if it were determined through site-specific analysis to be necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access to the pipeline would not be authorized.

If the project were approved, there would be a short-term impact on vegetation and soils caused by disturbance during construction of

the pipeline. Impacts to vegetation and soils would be insignificant once vegetation is reestablished along the pipeline. Under the present proposal, the trough would be constructed on state land outside the boundary of the WSA. This additional water could result in more even distribution of livestock which would balance utilization of the vegetative resource on the Smyer allotment by relieving some of the grazing pressure around existing livestock waters.

Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation). Since existing and proposed BLM plans do not identify any potential uses or activities that could result in extensive surface disturbance, the additional protection for water, soils, and vegetation provided by wilderness designation would not be significant.

b. Wildlife

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide protection for existing wildlife habitat. The restriction of vehicular access would reduce the potential for harassment and poaching of wildlife and could reduce hunting pressure in the area.

Since no major surface disturbing activities are proposed in existing BLM plans and existing vehicle use is low, the added protection as a result of wilderness designation would not be significantly different from nonwilderness management.

c. Visual

Although not significant, existing visual resources would be protected since the area would be managed under the more restrictive Visual Resource Management (VRM) Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted under the Class I designation.

d. Cultural

Wilderness designation could result in increased visitation to the area which could result in more human disturbance of cultural values. However, access within the area would be limited to foot and horseback travel. This would decrease site vandalism by individuals presently gaining access to the area with motorized vehicles and equipment.

The overall impact would be increased protection for the remaining cultural values. This is not considered significant because extensive vandalism has probably already resulted in the loss of the more valuable and important cultural resources in the area.

e. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be permitted. However, if there were no practical alternatives, a permit for vehicular access along the existing vehicle trail for maintenance of the existing mile of boundary fence between the Burdick Hills and Mashed O allotments could be authorized.

If it were determined to be necessary for protection of rangeland or wilderness resources, and there were no practical alternatives, the proposed 1/2 mile of pipeline on the Smyer allotment (2046) could be constructed using motorized equipment. No access road would be constructed and vehicular access for maintenance purposes would not be authorized. Overall, impacts to livestock operators would be insignificant and would consist primarily of minor inconveniences due to restricted vehicular access.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. The area would be specifically managed to maintain its natural appearance, opportunities for solitude, and special features.

Two factors could slightly impact the ability of the Cedar Mountains WSA to be managed as wilderness. Nonwilderness uses on the state land adjacent to the boundaries of the WSA could degrade natural values and opportunities for solitude. Vehicle use on the cherry-stemmed road in the east-central part of the WSA could also degrade naturalness and opportunities for solitude.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 14,911 acres of public land within the Cedar Mountains WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values would be significant since management of the area would be subject to administrative change in the long-term. The impacts to air, nonprimitive types of recreation, and realty actions were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

Under the No Action/No Wilderness Alternative, the wilderness values and special features of the Cedar Mountains WSA would not be provided with long-term Congressional protection. Since existing and proposed BLM plans do not identify any activities which would impair wilderness values, the entire Cedar Mountains WSA would probably retain its natural character in the short-term. However, management of the area as specified in land use plans would be subject to administrative change and the impacts to wilderness values could be significant in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Motorized access on existing trails would be allowed. The proposed 1/2 mile of pipeline would be constructed on the Smyer allotment. Road construction and vehicular access would be allowed. Short-term impacts due to the construction of the proposed development would be the same as those described under the All Wilderness Alternative. Vegetation and topsoil would be permanently destroyed where the road is constructed. Since this development would not involve major surface disturbance, the impacts on soils and vegetation would not be significant. Impacts to water resources under this alternative would not be significant.

b. Wildlife

If there is more surface disturbance, there would be a slight impact to wildlife because of habitat loss. Additional human intrusion would disturb some animals and poaching might increase. These impacts would not be significant.

c. Visual

Under this alternative, the entire WSA would be managed as a VRM Class II. Under a VRM Class II, changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. Since existing and proposed BLM plans do not identify any activities which would impair visual resources, the existing Class B scenic quality would be substantially maintained in the short-term. Impacts to visual resources would not be significant.

d. Cultural

There would be continued access to the area by vehicles with the possibility of additional vandalism. Because extensive vandalism has already occurred in the area, these impacts would probably not be significant.

e. Minerals

There would be no impacts to leasable or locatable minerals. Mineral exploration and development would be regulated under the Surface Management Regulations (43 CFR 3809) to prevent unnecessary and undue degradation of the land. No economic benefits would be lost under this alternative.

f. Livestock Grazing

Motorized vehicles and equipment could be utilized as needed for livestock management. The proposed pipeline on the Smyer allotment (2046) would be constructed with an access road. The development could be checked and maintained on a convenience basis using motorized equipment. There would be no impacts to livestock grazing.

APPENDIX F

COOKE'S RANGE WSA (NM-030-031)

I. GENERAL DESCRIPTION

A. Location

The Cooke's Range Wilderness Study Area (WSA) is located in Luna County, approximately 15 miles north of Deming, New Mexico.

The following U.S. Geological Survey (USGS) topographic maps cover the WSA:

Dwyer, New Mexico	15-minute scale
Lake Valley, New Mexico	15-minute scale
Goat Ridge, New Mexico	7 1/2-minute scale
Massacre Peak, New Mexico	7 1/2-minute scale

B. Climate and Topography

The Cooke's Range WSA is characterized by an arid, continental climate. Annual precipitation totals average between 8 and 10 inches, with 12 to 14 inches at elevations greater than 6,000 feet. Over 50 percent of the total occurs from July through September in high intensity, short duration thundershowers.

Temperatures reach a maximum in July with average afternoon temperatures reaching the mid-90's at lower elevations. Afternoon highs in the 80's are more common at higher elevations. Minimum temperatures during the winter months range from the mid-20's to near freezing.

Surface winds are predominantly from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

The terrain of the Cooke's Range plays a very important role in the climate. Temperatures generally decrease with elevation. However, the aspect of a location, whether it is a north or south facing slope, also contributes in defining temperature, particularly in terms of its daily and annual range.

Cooke's Peak rises over 3,600 feet above the surrounding plains and dominates the landscape for miles around. Portions of the north and east slopes of Cooke's Peak are within the boundaries of the WSA; however, much of the south and southwest slopes are on cherry-stemmed state and private lands. Several ridges, rising between 1,000 and 3,000 feet above the surrounding terrain, run the length of the WSA. These ridges, which form the backbone of the range, are dissected by dozens of drainages and secondary ridges. Several steep walled canyons and dropoffs are located in the WSA.

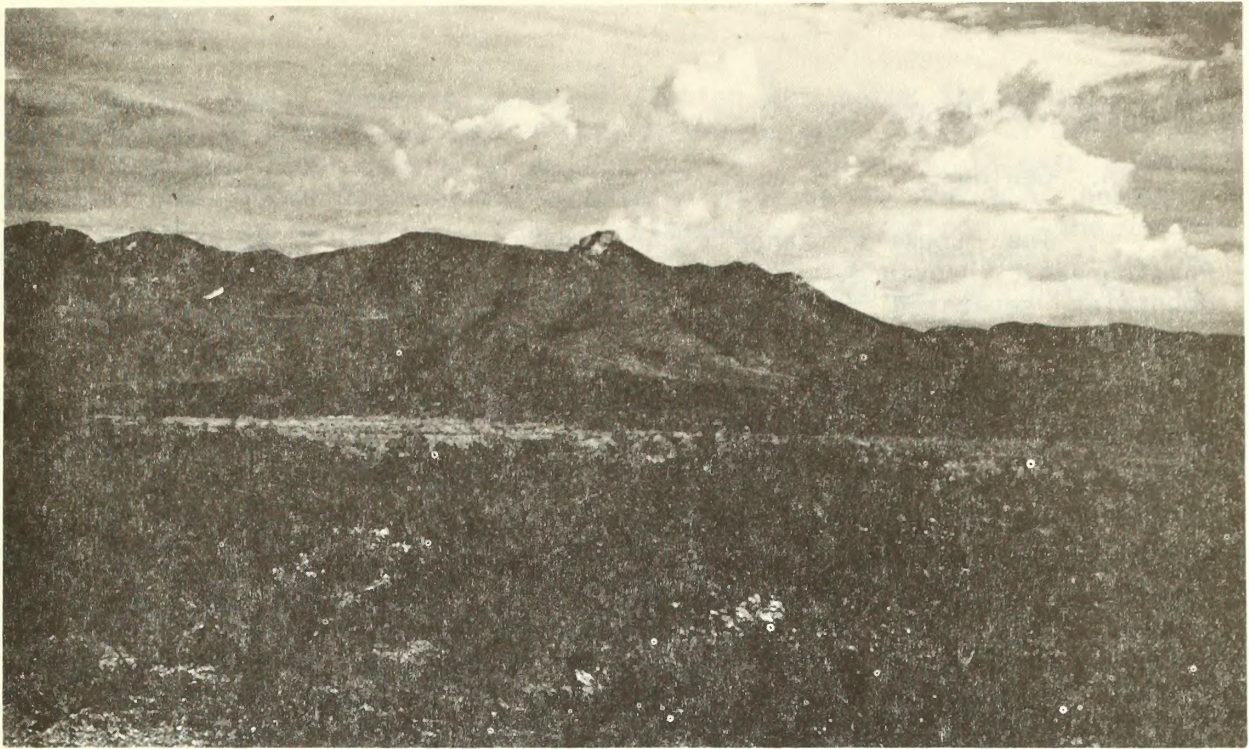
C. Land Status

The WSA contains 19,608 acres of public land and 640 acres of state inholdings. Four hundred eighty acres of private land and 1,440 acres of state land are cherry-stemmed out of the WSA. The subsurface mineral estate of the cherry-stemmed 480 acres of private land in and around Provinger Canyon is Federally-owned. (See Map 6 for land status within the WSA boundary.)

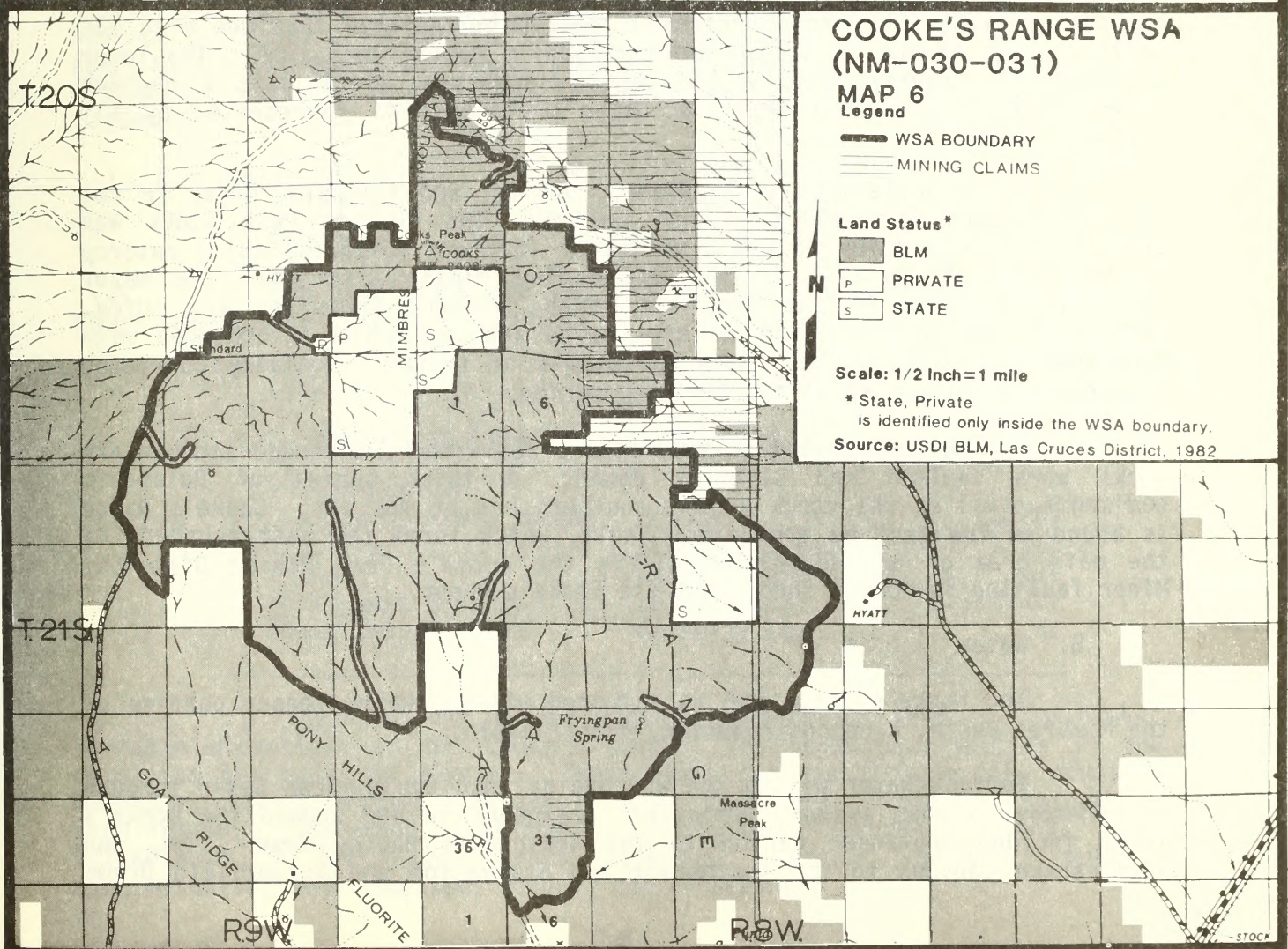
D. Access

Legal access to the Cooke's Range WSA is available on the east, west, and southwest boundaries. Legal access on the east side is by way of the Hadley Draw road (County Road A019), which leads north off State Highway 26 at Florida, approximately 12 miles northeast of Deming. The county maintained road terminates approximately 3 miles southeast of the ghost town of Cooke's. From there, a four-wheel drive road provides additional physical access as it continues on to Cooke's and on around the north boundary through Hurricane Pass.

County Road A008 runs due north from U.S. Highway 84 just north of Deming and forms approximately 4 miles of the western boundary of the WSA. County Road A016 branches off of A008 to the east-southeast and forms approximately 3 miles of the southwest boundary of the WSA.



Looking towards Cooke's Peak from the southern part of the WSA.



II. EXISTING RESOURCES

A. Geology

The Cooke's Range WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments.

Cooke's Range is a horst block composed of Precambrian granitic rocks and Paleozoic and Mesozoic sedimentary rocks which were intruded by a large granodiorite stock (Cooke's Peak) during the Tertiary period.

The Paleozoic era was characterized in this region by a stable shelf environment with minor regional faulting. The only major period of subsidence occurred during Ordovician time. Major Paleozoic formations (approximately 3,000 feet of Paleozoic and Mesozoic sediments have been measured in Cooke's Range) include the Ordovician El Paso and Montoya groups, the Silurian Fusselman limestone, the Devonian Percha shale, the Mississippian Lake Valley formation, the Pennsylvanian Magdalena group, and the Permian Lobo formation.

In the Mesozoic era, erosion dominated the Jurassic and Triassic periods and relatively thin Cretaceous sediments indicate that the area was on the margin of the large geosynclinal basins during this time. The lower Cretaceous is represented by the Sarten sandstone, which caps a hogback ridge south of Cooke's Peak. The upper Cretaceous is represented by the Colorado shale.

Large scale folding, faulting, uplift, and intrusion began in the late Cretaceous or early Tertiary periods. The Cooke's Peak stock was probably emplaced prior to the eruption of Tertiary volcanics which outcrop to the east of the WSA in the Old Hadley Mining District. The major Tertiary volcanics in the area are macho pyroxene andesites and tuffs. Tuffs form the earliest part of the series and are often interbedded with sandstone and conglomerate. Varying amounts of tectonic activity continued throughout a large part of the Tertiary period.

During emplacement of the Cooke's Peak stock, intruded sedimentary rocks were faulted and slightly domed. A thick series of Paleozoic sediments overlies the stock on the southern end of the WSA. Cooke's Range is bound on the east by the Sarten Fault, which forms the east boundary of the main area of ore deposition within the Cooke's Peak Mining District. Minor faulting is common throughout the Cooke's Range.

B. Water

The Cooke's Range WSA is situated within the northeast portion of the Mimbres Basin, a noncontributing, closed basin.

Surface water within the WSA drains into the Mimbres Basin through an ephemeral stream system. Principal drainages in and around the Cooke's Range include Provinger Canyon to the southwest; Hadley Draw, OK, and Rattlesnake Canyons to the southeast; and Starvation and Butterfield Draws

to the south. These ephemeral streams flatten out below the alluvial fan slopes and become a nonintegrated system of washes and arroyos in the valley floor. Surface flow generally occurs as a result of intense summer precipitation. There are several scattered springs in the WSA; however, their contribution to surface flow is limited. One spring in the upper reach of Hadley Draw is particularly important for its contribution to the riparian habitat. Although the spring and riparian habitat are outside the WSA boundary, they are near enough to have an influence on the WSA.

Ground water is available primarily from the alluvial deposits in the draws. Little potential exists in the higher elevations underlain by granite and intrusive rocks. Ground water movement from the east side of the WSA is to the southeast, and from the west the water follows the Mimbres trough to the southwest. The ground water reservoir is recharged mainly during flood runoff by infiltration in stream channels. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The soils of the Cooke's Range WSA were derived from a variety of parent rock types. Three major soil types occur within the WSA dependent on the particular landform on which they are found. The most prevalent soil type occurs on steep hillsides where soils are shallow and stony. Exposed bedrock outcropping is common. Deeper, cobbly soils occur on alluvial fans and creosote covered footslopes around the mountains. Soils in the small drainageways and valleys between the mountains are typically deep and fine textured.

D. Vegetation

1. General

The vegetation and associated range sites within the Cooke's Range WSA consist of five major types:

Vegetation Type	Range Site	Federal Acres
Pinyon-juniper- mixed mountain shrub	Mountain	13,899
Creosote	Gravelly areas	3,068
Tobosa	Draws (swales)	879
Mixed desert shrub	Sandy areas	1,702
Mixed desert shrub	Gravelly sand	60

Pinyon-juniper is the dominant vegetation type in the higher mountain elevations of the Cooke's Range. The vegetation species in the mountains are many and diverse. Other shrub species include oak, mountain mahogany, sotol, Wright silktassel, pale wolfberry, ocotillo, spicebush, Fendlerbush, snakeweed, creosote, mesquite, tarbush, yucca, and brickelbush. Associated grass species include gramas, muhlys, vine-mesquite, cane bluestem, tobosa, and threeawns.

Creosote gravelly areas surround the mountain region. Other tree and shrub species which characterize these areas are snakeweed, mesquite, mariola, yucca, oak, juniper, tarbush, mimosa, range ratany, and pale wolfberry. Grass species include cane bluestem, gramas, tobosa, threeawns, fluffgrass, and bush muhly.

Tobosa draws occur in the southern portion of the WSA. Other associated grass species are bush muhly, alkali sacaton, and burro grass. Shrub species include pale wolfberry, creosote, tarbush, yucca, mesquite, fourwing saltbush, and snakeweed.

Mixed desert shrubs are the dominant vegetation type on the sandy areas in this WSA. They occur on the southwest side of the mountain range. Shrub species include snakeweed, yucca, Mormon tea, mariola, cacti, mesquite, creosote, and tarbush. Of the few grass species present, gramas, fluffgrass, and bush muhly are the most prevalent.

The gravelly sand range site is in a sandy arroyo in Frying Pan Canyon. This site is a pseudoriparian area that was identified as special habitat for wildlife. Shrub species include creosote, tarbush, mesquite, snakeweed, yucca, and cacti. Grass species include bush muhly, fluffgrass, and tobosa.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Cupressus arizonica - Arizona cypress

Status: Selected by the New Mexico State Heritage Program as a special concern element. A small stand of these trees occur approximately 1 mile north of the WSA boundary. This is the only known native population in New Mexico.

Habitat: Scattered to dense stands straddling ridge and downsides. Mixed with pinyon and juniper.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

Species: Penstemon dasyphyllus

Status: Selected by the New Mexico State Heritage Program as a special concern element. This plant occurs approximately 1/2 mile from the southeast boundary of the WSA.

Habitat: Scattered on gravelly slopes in desert grassland.

Species: Penstemon lanceolatus

Status: Selected by the New Mexico State Heritage Program as a special concern element. This plant occurs approximately 1 mile north of the WSA boundary.

Habitat: Scattered on southwest facing slopes under mountain mahogany and oak and in open areas under various grasses.

Species: Scrophularia macrantha - red figwort

Status: Federal endangered. This plant occurs approximately 1 mile north of the WSA boundary.

Habitat: Among rock debris in cliff area; among pinyon-juniper, Arizona cypress, and ash species in wet spots.

Species: Silene wrightii - Wright's catchfly

Status: Selected by the New Mexico State Heritage Program as a special concern element. This plant occurs approximately 1 mile north of the WSA boundary.

Habitat: Found on sandstone ledges facing north at top of ridge. Associated with Scrophularia macrantha, Halimolobus diffusus, Selaginella, and Phacelia rupestris.

E. Wildlife

The Cooke's Range WSA has a diversity of habitat sites. Most of the area consists of mountain sites--mixed shrub, grass, or pinyon-juniper grass with smaller sites that are classified as oak draw, creosote, and pseudoriparian. In addition, there is a small riparian habitat site just outside the northeast boundary. It is close enough to have an effect on wildlife within the WSA. There are also springs in the WSA which provide water for wildlife.

Another valuable habitat feature is the cliffs in the higher elevations. There is evidence of golden eagle nesting in these cliffs.

The variety of vegetation in the Cooke's Range WSA results in a diverse wildlife community. There is an abundant avifauna, with 70 species recorded in 6 days field work by the BLM Integrated Habitat Inventory Classification System (IHICS) team (1981). Besides the golden eagle, several other raptors nest in or near the WSA: the red-tailed hawk, the Cooper's hawk, the great horned owl, and the prairie falcon (BLM 1981).

There are some mule deer in the range. Although the habitat is good, the herd is fairly small. There are approximately 2.5 animals per square mile. New Mexico Department of Game and Fish (NMDGF) estimates five deer per square mile to be the optimum number.

Some reptiles of scientific interest were collected during the BLM wildlife survey. An unusual lizard, the Gila whiptail was found. This species was previously known only from the Gila Basin (Behler 1979). A hybrid whiptail, New Mexican whiptail x little striped whiptail also was identified. The New Mexican whiptail, a parthenogenic species, can reproduce asexually, while the little striped whiptail reproduces sexually. These two species had not been known to hybridize, and the fact that one is parthenogenic makes this even more uncommon (Price 1982; Hakkila 1982).

Hybrid lizard species often develop to take advantage of a disturbed habitat. Cole (1978) discusses a hybrid whiptail which developed in Arizona where the habitat had changed from a grassland to a desert type. This suggests that hybrids such as the one collected in the WSA may be an indicator of vegetation changes.

F. Visual

The northern part of the WSA is composed of a craggy mountain with some tilted banded rock exposed. The range of colors exposed in the mountains includes yellow gray to mottled grays and reds. Texture is coarse. South of this extremely rugged section, the WSA becomes less precipitous with more rolling and open hills cut by somewhat deep canyons. Vegetation is generally composed of patchy clumps of trees and shrubs which often follow rock stratifications or drainages.

The Cooke's Range WSA has a Class A (high) scenic rating and high scarcity rating. The range can be seen from Interstate 10, U.S. 180, Deming, City of Rocks State Park, and Deming's Centennial Park. The WSA is within a Visual Resource Management (VRM) Class II area.

G. Cultural

One of the most significant petroglyph sites west of the Rio Grande in the Las Cruces District is located near Frying Pan Spring in the southeast part of the Cooke's Range WSA. The Mogollon style designs include crosses, abstracts, masks, lizards, a plumed serpent, and birds. These petroglyphs provide information regarding prehistoric art styles and beliefs. The Frying Pan Spring area contains at least one lithic site. A four room Classic Mimbres site located in the western portion of the WSA could provide significant information regarding Mimbres sites in an environmental zone in which they usually do not occur.

The historical component of this WSA is probably the most significant of all the WSAs in the Las Cruces District. The Butterfield Trail forms the southeast boundary of the WSA. The Trail was one of the most significant migration and communications routes in the west, with use of the area starting in 1846. Beginning in 1863, military patrols from Fort Cummings (the most significant Indian Wars fort in New Mexico), 1/2 mile east of the WSA, scoured the area in search of hostile Indians. In 1882, the mining town of Cooke's was established along what is now the northeast boundary of the WSA. Between 1882 and 1914, about 1,500,000 pounds of lead and 6,000 ounces of silver were removed from the mines, making Cooke's one of the best lead producing areas in New Mexico. At least 100 individuals occupied the town. The total value of the production was about \$4,000,000 until 1927 (Anderson 1957).

H. Air

Generally, the quality of air within the Cooke's Range WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the WSA. The Minerals Management Service has classified the Cooke's Range and surrounding areas as potentially valuable for oil, gas, and geothermal energy resource accumulations. An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (ARCO) (1983) rated the WSA as having a low intermediate favorability for oil and gas. This rating indicates that some geologic characteristics are present that are favorable for the accumulation of a given resource. However, a generally thin sedimentary section and the widespread presence of intrusive igneous bodies indicate low potential for oil and gas in the WSA (BLM Mineral Resource Inventory 1981). There are no geothermal energy indicators known to occur within the WSA (BLM Mineral Resource Inventory 1981).

Uranium occurs in a fluorite vein in limestone approximately 2 miles north of the WSA in T. 20 S., R. 9 W., Section 12. Another occurrence of uranium has been found in T. 20 S., R. 8 W., Sections 10 and 11, with traces of fluorine and lead. The presence of uranium in fluorite veins indicates a potential for uranium mineralization in the area. Activities that may be initiated to further evaluate the uranium resources in the general area are unpredictable. Potential for an economic deposit is poor. An Energy and Mineral Resource Evaluation submitted by ARCO (1983) rated the WSA as having a low intermediate favorability for uranium.

Approximately 216 acres of the Massacre Peak Petroglyph Area (total of 240 acres) and approximately 2,277 acres of the Fort Cummings Recreation Area (total 5,999 acres) are within the WSA. These areas were classified for recreation and historic purposes under the Classification and Multiple Use Act of 1964 and are presently segregated from all forms of mineral entry.

Two areas within the WSA are covered by special stipulations for energy minerals leasing (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983). The Hadley Draw Riparian Area is totally within the boundaries of the WSA. Any energy minerals lease let within this 1,350-acre area is subject to a protective stipulation for threatened or endangered species habitat. This stipulation could limit surface use and occupancy. Portions (8,513 acres) of the Cooke's Range Wildlife Area (total 11,645 acres) are also within the WSA. This area is covered by a protective stipulation for nesting raptors which allows surface disturbing activities only from August 1 through January 31.

2. Non-Energy Minerals

Decorative stone occurs in the Sarten sandstone in the southern part of the WSA. There are sources for sandstone located in more readily accessible areas, such as the Faywood area. Common varieties such as sand and gravel occur throughout the WSA. However, common varieties also occur in areas closer to Deming where there are ample reserves.

One mine (Silver Cave) is located within the WSA boundary, in T. 20 S., R. 9 W., Section 35, NE1/4. The adit penetrated a 3-foot wide quartz vein in igneous rocks. It is said to have produced high grade silver, with minor amounts of copper and lead.

The Jose and Cooke's Peak Mining Districts, just north of the WSA, produced lead, zinc, copper, silver, and gold as late as 1947. Minor shipping occurred through 1952. One adit west of the Jose Mining District contains exposures of wulfenite crystals, although no production of molybdenum has been recorded. Fluorite veins are exposed by prospect pits in Hurricane Pass and north along a ridge spine trending northwest from the Jose Mining District. The Old Hadley Mining District, 1/2-mile northeast of the WSA, produced lead, silver, copper, and gold from Tertiary pyroxene andesites. Barite is a prominent gangue mineral in this area.

Large fluorspar deposits occur to the north (White Eagle Mine) and to the south (Fluorite Ridge) of the Cooke's Range WSA. The presence of these ore bodies, coupled with the exposed veins in the vicinity of Hurricane Pass, may be representative of a regional fluorite trend possibly extending through the WSA.

The existence of valuable minerals at depth in the WSA is theoretically favorable based on the model of the Cooke's Peak and Jose Mining Districts. In these Districts, the mineralization occurs as replacement bodies controlled by faulting in the Fusselman limestone, just below the Percha shale. Within the boundaries of the WSA, the Percha shale and Fusselman limestone are overlain by the Lake Valley limestone; consequently, any mineralization which may occur along their contact would be at depth.

There are currently 69 mining claims recorded either totally within the WSA or overlapping the periphery of the WSA (BLM microfiche, 1984). These claims are located near the mineralized areas. Eight of these claims were located prior to the enactment of the Federal Land Policy and Management Act (FLPMA) on October 21, 1976, and are referred to as "pre-FLPMA" mining claims. The other 61 claims were located after this date and are called "post-FLPMA" claims. There is high potential for the occurrence of strategic minerals such as lead, silver, gold, copper, fluorite, and zinc. (See Map 6 for the general locations of mining claims.) The Energy and Mineral Resource Evaluation submitted by ARCO (1983) substantiates this evaluation, indicating a rating of highest favorability for the occurrence of copper, lead, zinc, gold, and silver, and a high intermediate rating for the occurrence of fluorite.

B. Watershed

Water use within the Cooke's Range WSA is primarily by livestock and wildlife. There is one well facility and three spring developments within the WSA (see Chapter III, Livestock Grazing). Additionally, several well facilities and dirt tanks for livestock watering are located just outside the WSA boundary. These developments are cherry-stemmed.

The Cooke's Range is within the Mimbres Valley declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Cooke's Range WSA. Licensed grazing use on public land includes cattle and a few horses. Most of the Cooke's Peak area of the Cooke's Range is inaccessible to livestock due to the steep slopes.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Treasure Rockhound 2009	5,330	564	2,048	38%
R. May 2029	1,174	264	626	53%
Mimbres Mtn. Rush 2030	11,057	1,548	4,574	41%
T. L. Hyatt 3028	32,918	6,768	12,360	38%
TOTAL			19,608	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
R. May 2029	windmill	T. 20 S., R. 8 W., Sec. 31
Mimbres Mtn. Rush 2030	interior fence	3 3/4 miles
T. L. Hyatt 3028	spring	T. 21 S., R. 9 W., Sec. 10
	spring and trough	T. 21 S., R. 9 W., Sec. 11
	spring and trough	T. 21 S., R. 8 W., Sec. 20

Boundary Fences:

Mimbres Mtn. Rush 2030 and Treasure Rockhound 2009 1 1/2 miles
Treasure Rockhound 2009 and Hyatt 3028 3 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

This WSA is currently used for rockhounding, hunting, hiking, picnicking, camping, and sightseeing. Vehicle related recreation use occurs on the WSA boundary roads and on the six roads cherry-stemmed into the WSA. Many of these roads require four-wheel drive vehicles.

Portions of the Massacre Peak Petroglyph Area near Frying Pan Spring and Fort Cummings Recreation Area are within the WSA. These areas were classified for recreation and historic purposes under the Classification and Multiple Use Act of 1964 and are presently segregated from all forms of mineral entry (see Chapter II, Cultural, and Chapter III, Energy Minerals).

E. Education/Research

Dr. Richard Spellenberg of New Mexico State University's Department of Biology has been working on a remnant population of Arizona cypress on Cooke's Range which is approximately 1 mile north of the WSA boundary.

F. Wildlife

Some possibility exists that the Cooke's Range WSA could be a future desert bighorn sheep transplant site, but there is no timeframe as yet. According to the New Mexico Department of Game and Fish (NMDGF), more intensive study is needed because of the human disturbance factor. The area is on the NMDGF study priority list (Sandoval 1982).

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Cooke's Range WSA generally appears natural. Imprints of man within the WSA and along the boundary include access routes, rangeland developments, evidence of mining activity, and a telephone line.

Access routes include several vehicle trails in the southern half of the WSA and six roads cherry-stemmed into the WSA from the west, south, east, and north boundaries. The vehicle trails have generally insignificant impacts on naturalness due to vegetative and topographic screening. The cherry-stemmed roads are also substantially unnoticeable. The rangeland developments located at the end of these cherry-stemmed roads impact naturalness locally. These developments include windmills and a large detention dam in Starvation Draw.

Rangeland developments located within the WSA boundary are substantially unnoticeable. These developments include a windmill, fence, and developed springs.

Mining activity in the northern portion of the WSA has had some impact on naturalness. Although there are mine shafts, small tailings piles, and an abandoned tramway, the impacts are mitigated by vegetative and topographic screening.

The single-wire telephone line which crosses through the southeast portion of the WSA in T. 20 S., R. 8 W., Sections 19 and 20, is constructed on 10 foot wooden poles without cross pieces. The telephone wire is attached to existing fences east and west of these sections. The telephone line provides service between the Hyatt ranch headquarters and Treasure Rockhound ranch headquarters. The telephone line does not have a right-of-way. Although the line can be seen in the immediate area, its impact on naturalness is reduced by topographic screening and use of native materials.

The major topographic features of the WSA are virtually pristine. Rugged canyons and steep ridges have restricted development to the periphery of the WSA with only minor developments being constructed within the range itself.

The WSA appears to have been affected primarily by the forces of nature and the imprint of man's work is substantially unnoticeable.

b. Solitude

The WSA's size, configuration, and topography are the most important factors in determining the area's opportunities for solitude.

The 19,608-acre WSA is approximately 7 miles long and from 1 to 6 miles wide. The large size of the WSA enhances opportunities for visitors to find a secluded place. The large block of undeveloped state and private lands which is cherry-stemmed into the northern portion of the WSA has little effect on opportunities for solitude at the present time. However, the resulting boundary configuration in this part of the WSA is such that outside sights and sounds could affect the quality of opportunities for solitude around Cooke's Peak.

The WSA's rugged topography also creates numerous opportunities for solitude. The major portion of the WSA in and around Cooke's Range provides outstanding opportunities for solitude. The combination of ridges and drainages creates a great deal of topographic relief and provides opportunities for seclusion in almost every drainage and on many of the ridges.

Opportunities for solitude in the creosote flats in the south and southwestern portion of the WSA are less than outstanding due to the lack of topographic screening.

c. Recreation

The Cooke's Range WSA offers a variety of primitive recreational opportunities. The area is large enough to support a three or four day pack trip. Opportunities also exist for rock climbing, horseback riding, and photography. Opportunities for deer hunting are good.

The rugged mountain range, with the steep ridges and canyons and lack of significant developments, offers an excellent opportunity to use outdoor skills and to interact with a natural environment. Opportunities for primitive recreation are enhanced by the size of the WSA and the diversity of vegetation and topography found in the WSA.

The state and private lands south of Cooke's Peak detract from the quality of opportunities for primitive recreation in the WSA. Hikers cannot climb the peak from the south nor can they hike directly through the WSA. Although visitors may still traverse the WSA by following the eastern and western boundaries, and the Peak is accessible along ridges from the north, east, and west, the primary point of interest in the WSA is not entirely available for recreational activities.

2. Special Features

The Cooke's Range WSA contains special ecological, cultural, and scenic features.

The ecological features include both vegetation and wildlife values of scientific and educational interest. The plant species in the WSA are numerous and diverse and in turn support a diverse wildlife community. Some reptiles of special scientific interest have been found in the WSA (see Chapter II, Wildlife). The WSA also provides habitat for a Bureau sensitive plant species proposed for Federal listing, Federal endangered plant species, and plant species selected by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation).

The special cultural and historical features of the WSA are among the most significant in the Las Cruces District (see Chapter II, Cultural). The Cooke's Range also has outstanding scenic features with a Class A (high) scenic quality rating (see Chapter II, Visual).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the area as being in the Chihuahuan Desert Province with a potential natural vegetation of Trans-Pecos shrub savanna.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
mountain mahogany oak scrub	13,899
creosote	3,068
grama-tobosa shrubsteppe	879
Trans-Pecos shrub savanna	1,762

b. Distance from Population Centers

The Cooke's Range WSA is approximately 3 hours driving time from El Paso, Texas; 2 hours from Las Cruces, New Mexico; 5 hours from Albuquerque, New Mexico; 5 hours from Tucson, Arizona; and 7 hours from Phoenix, Arizona.

B. Manageability

Both positive and negative factors affect the potential of the Cooke's Range WSA for being managed as wilderness: topography and size, the location of cherry-stemmed roads and rangeland developments, land status and boundary configuration, existing minerals segregations, and pre-FLPMA and post FLPMA mining claims.

The rugged topography and large size of the WSA would positively affect manageability of the area as wilderness. The area is large enough and rough enough to accommodate visitors without compromising opportunities

for solitude or recreation. Visitors would be channeled somewhat by the topography, but they would not be so restricted as to gather in one or two portions of the WSA.

Numerous roads are cherry-stemmed into the WSA. Vehicle use on these roads in combination with the local impacts of rangeland developments diminish the naturalness and solitude in the vicinity of the cherry-stemmed roads and thus affects the BLM's ability to manage the WSA to preserve wilderness values.

Cooke's Peak is the major topographic, recreational, and scenic focal point of the Cooke's Range WSA. However, all of Cooke's Peak is not in Federal ownership. Portions of the northwest, southwest, south, and southeast slopes of Cooke's Peak are in private and state ownership and as a result, the boundary in the north half of the WSA is very convoluted. Nonwilderness or nonconforming uses, such as mining activity, on these nonpublic lands could negatively affect the BLM's ability to manage the focal point of the WSA as wilderness. Providing access across BLM land or surface disturbing activities on these lands would negatively affect naturalness and opportunities for solitude in the heart of the WSA. Since mining activities on the non-Federal lands around Cooke's Peak are a good possibility, the surrounding land status and resulting boundary configuration represent a major manageability concern, especially for the north half of the WSA.

Approximately 2,493 acres in the southeast part of the WSA are segregated from all forms of mineral entry. This acreage is within the Massacre Peak Petroglyph Area and the Fort Cummings Recreation Area which were classified for recreation and historic purposes under the Classification and Multiple Use Act of 1964. The segregation of these areas from mineral entry would enhance the manageability of the area as wilderness by protecting natural values, opportunities for solitude and primitive recreation, and special features from the impacts of mining activity.

There are numerous mining claims within the Cooke's Range WSA. The presence of these claims affects the manageability of the WSA in two ways:

1. The Federal Land Policy and Management Act (FLPMA) specifies that mining uses that existed on the date of approval of the Act may continue in the same manner and degree during the time that an area is under wilderness review. Such mining uses are grandfathered and may continue even if the uses would impair wilderness suitability.

In addition, mining claimants may be recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976, and the claimant can show BLM that the claim continues to be supported by such a discovery. Valid existing rights convey a more liberal development standard than grandfathered rights in that activities on valid claims are not limited to the same manner and degree. When it is determined that the valid existing rights can be exercised only through activities that will

impair wilderness suitability, the activities will be regulated only to prevent unnecessary and undue degradation. If any of the pre-FLPMA claims in the Cooke's Range WSA which meet the above criteria are developed, wilderness values could be degraded before the area is designated wilderness.

2. Once an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in an area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations, "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, wilderness values could continue to be degraded after the area is designated wilderness.

The mining districts, north and northeast of the WSA, produced strategic minerals in the past. Many of the mines along the north and northeast boundary of the WSA are patented. At present, these mines are subeconomic. Future production is both possible and unpredictable. The presence of known occurrences of strategic minerals coupled with the numerous mining claims in and around the WSA represents a major manageability concern in the long-term. The Cooke's Range WSA could not be managed to preserve existing wilderness values over the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Numerous public comments were received on the Cooke's Range unit during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The WSA proposal for Cooke's Range was the second most commented on recommendation in the state. A map showing proposed boundary modifications and land status was included in the comments. Maps and photos of rangeland developments and roads also were provided. Comments opposing WSA status slightly exceeded comments favoring WSA status. Numerous form letters and petitions were received favoring WSA status for the area.

Comments favoring wilderness study cited the range's naturalness and outstanding opportunities for solitude and primitive types of recreation. The scenic, cultural, historical, and wildlife supplemental values of the area also were discussed.

Almost half of those comments opposing wilderness study cited mineral resource conflicts. Others discussed impacts resulting from rangeland management activities, nonpublic land inholdings, irregular boundary, and jet plane fly-overs.

More public inputs were received on the Cooke's Range WSA during the public review period on the Draft Environmental Assessment (DEA) Wilderness Study Areas in the Las Cruces District (BLM 1983) than any other WSA included in the document. The majority of the inputs (27 personal letters and 49 form letters) favored wilderness designation for the Cooke's Range WSA. Reasons for favoring wilderness designation fell into five categories: (1) basic wilderness values, (2) supplemental values, (3) size, (4) manageability, and (5) resource conflicts.

Comments regarding the area's basic wilderness values and supplemental values generally reiterated comments made in past public review periods. The Continental Divide Trail Society's comments stated that they favor routing the Continental Divide Trail through the Mimbres Mountains, along the east side of the Cooke's Range to Fort Cummings, Deming, and Columbus. The Society feels that this route would be superior to keeping the Trail along the actual Divide through the "bootheel." They favor wilderness designation for the Cooke's Range WSA so as to minimize the likelihood of developments that would detract from the recreational experience along the Trail.

Two comments indicated support for wilderness designation of an area greater than the 19,608-acre WSA. The acreage figures listed were 30,000 acres and 35,000 acres. Three other comments indicated that the WSA should be expanded to the north to include the endemic stand of Arizona cypress. The size and boundaries of the Cooke's Range WSA were determined by the location of roads and land status. The BLM did not study acreage outside the designated WSA, nor does the Wilderness Study Policy (BLM 1982) contain provisions for addition of vast acreages to a WSA. The Arizona cypress stand covers approximately 700 acres of public and private lands. This parcel of land is not contiguous to the Cooke's Range WSA; it is separated

from the WSA by the road through Hurricane Pass, the road north from the Pass to the windmill in T. 20 S., R. 9 W., Section 13, and the patented mine in Section 13.

Comments regarding the manageability of the Cooke's Range WSA as wilderness varied. These included the general comment that the area is manageable and disagreement with the use of manageability conflicts as the rationale for a nonsuitable wilderness recommendation. Several commentators indicated that the remoteness and ruggedness of the WSA would enhance wilderness management and the impacts of any future mining activities would be mitigated by vegetative and topographic screening, just as the existing impacts of past mining activities are now.

Two comments expressed the opinion that cherry-stemmed private land in the WSA is not a manageability problem because it cannot be developed because of access and water problems, and the Federal mineral estate underlying the private surface cannot be mined without Government approval. The only parcel of cherry-stemmed private land in the WSA has existing road access and a well is located on the parcel. In addition, the Federal Government has no regulatory authority over mining activities on private surface/Federal subsurface lands. Restrictions on surface disturbance and plans for reclamation would be totally dependent upon agreements reached between the private surface landowner and the mining claimant. Additional comments pertaining to the effects of the area's mineral values on manageability included: Congress can open the area if strategic minerals are needed in the future, BLM should only allow the development of existing claims and prevent further exploration, and the impending deadline for filing claims and the nature of the Cooke's Range will keep mining to a minimum.

Several commentators suggested solutions to manageability conflicts. These included land exchanges for inholdings or contiguous non-Federal lands and closure of cherry-stemmed roads. The BLM's policy on acquisition of non-Federal lands is discussed in the Final EA to which this Wilderness Analysis Report (WAR) is appended. BLM did not consider the closure of cherry-stemmed roads to resolve manageability conflicts because of guidance provided by Washington Office Instruction Memorandum No. 82-176. This memorandum provides guidance on the application of the manageability criterion in wilderness studies and states, "If the cherrystem does not provide access to a...grazing facility...you may consider a road closure." All of the cherry-stemmed roads into the Cooke's Range WSA provide access to grazing facilities except one. The cherry-stemmed road in the northern part of the WSA, southeast of Hurricane Pass, provides access to a mine.

Pro-wilderness comments on resource conflicts in the Cooke's Range WSA all related to the area's mineral potential. The predominant attitude expressed in these comments was that the wilderness values of the Cooke's Range WSA outweigh mineral values. One commentator expressed the opinion that the conclusion in the WAR that there is high potential for nonenergy minerals at depth is not based on hard evidence that economic deposits exist. The comment went on to state that the extraction would be expensive and economic benefit questionable. Other comments included: the area has low potential for energy minerals, the WAR does not include a discussion of alternative sites in the region for those minerals found in the Cooke's

Range, and the Government should not be concerned with the effects of wilderness on the value of valid claims in the WSA.

Fifteen personal letters were received opposing wilderness designation for the Cooke's Range WSA. More letters of opposition were received for this WSA than any other in the DEA. Two of the personal letters indicated agreement with the analysis in the WAR and one letter listed no reasons for opposing wilderness. The reasons cited in the other letters for opposing wilderness designation included: lack of naturalness due to mining activities and rangeland developments, the area has more roads than shown on map, and the area would be difficult to manage because of state and private inholdings.

Most of the comments listed the area's excellent potential for lead, zinc, and silver and past production of these minerals as reasons for opposing wilderness designation. One comment cited the area's oil, gas, and geothermal potential. Several comments expressed the opinion that additional exploration is needed to fully assess the area's mineral potential and wilderness designation would restrict mining activities too severely to allow continued development.

Other opposing comments speculated that wilderness would limit or ban access and collecting in this popular rockhound area and the area should remain open to the public. One commentator suggested that a recreation area be established in the Cooke's Range area to protect the Frying Pan Spring petroglyphs and Pony Hills withdrawal from grazing. The New Mexico Natural History Institute agreed that resource conflicts and manageability problems render the area a less than ideal wilderness, but "Strong management provisions to protect outstanding biological values should come by other means."

Information submitted by the mineral industry regarding the mineral potential of the Cooke's Range WSA has been incorporated into the appropriate sections of this Final WAR.

Information submitted by the New Mexico Natural Resources Department on a number of Federal endangered plant species and state plant species of special concern possibly occurring in the WSA has been incorporated into the appropriate sections of this Final WAR.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 19,608 acres of public land within the Cooke's Range WSA would be recommended suitable for wilderness designation.

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, development work, extraction, and patenting of mining claims existing in the Cooke's Range WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. Plans of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

At the present time, there are approximately 69 existing mining claims in the WSA or overlapping the periphery. Estimates as to the number or locations of claims that would prove to be valid are beyond the scope of this report, as are predictions of the impacts of mining activities on such claims.

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. The impacts to locatable mineral resources would also be significant under this alternative. The impacts on nonprimitive types of recreation, air, education/research, and realty actions were clearly insignificant; therefore, they were not discussed.

1. Impacts to Minerals

To date, no production of energy minerals has been recorded. A possible uranium deposit exists north of the WSA, but there is only geologic inference for deposits of uranium within the WSA. The best oil and gas potential also lies outside of the WSA. Since the best potential for oil and gas and uranium lies outside the WSA, impacts to energy minerals would be minor in the short-term. It is assumed that exploration and leasing for energy minerals under the mineral leasing laws would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential or for production and development. Although the energy minerals industry could be affected in the long-term, the impacts would not be significant.

The northern part of the Cooke's Range WSA is bound by existing mines and claims. These mines were good producers of strategic minerals in the 1940's and 1950's. Today, economics have halted production. Numerous unpatented claims are located within the WSA and a BLM Mineral Resource Inventory (1981) indicates high mineral potential. Valid claims located before wilderness designation could be developed to their full potential. However, during development, the mining companies may incur additional costs of operation depending on restrictions on the type and location of access. Since there is currently no mining activity, the economic impact would be minimal in the short-term.

It is assumed that no new exploration, prospecting, or location of mining claims would be allowed after wilderness designation. Mineral trends could not be followed outside of the existing valid claim boundaries. Full development of the mining district could not take place. Most of the minerals are on the list of strategic and critical minerals.

Based on existing information, it appears that wilderness designation could have significant impacts on locatable mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including threatened, endangered, or sensitive plant species (see Chapter II, Vegetation) in the WSA.

Other than the possibility of development of valid existing mining claims, no major surface disturbing activities are proposed in existing BLM plans and vehicle use is presently limited to existing roads and trails. The added protection for water, soils, and vegetation as a result of wilderness designation would not significantly differ from that of nonwilderness designation.

Valid existing mining claims could be developed. Impacts would include the removal of existing vegetation and topsoil during excavation of mines and deposition of mine tailings and could be moderate to major depending on the locations and extent of the activities.

b. Wildlife

Wilderness would impact wildlife and wildlife habitat. Surface disturbance and mechanized activities would be limited which would preserve and protect wildlife habitat. Since such activity in the area would be restricted, direct disturbance to animals would be minimized. This protection would have the greatest effect on raptors which nest in the Cooke's Range and for desert bighorn sheep, if the New Mexico Department of Game and Fish transplants the bighorn sheep in the range.

Existing valid mining claims could be developed and this would degrade wildlife habitat. Many of the existing claims are in the higher elevations of the WSA, where valuable habitat for raptor nesting could be impacted.

Other than the possibility of development of valid existing mining claims, there are no existing or proposed activities that would result in extensive surface disturbance. Since wilderness management would not significantly differ from management specified in existing BLM plans, the impacts on wildlife under this alternative would not be significant.

c. Visual

Existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity. The impacts on visual resources under this alternative would not be significant.

d. Cultural

Access to the area would be limited to foot and horseback travel. Although such restrictions could decrease site vandalism by individuals presently gaining access to the area with vehicles, the impacts would not be significant.

e. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be permitted. However, if there were no practical alternatives, a permit for vehicular access could be authorized to maintain the developed spring on the Hyatt allotment (3028).

The windmill in OK Canyon on the May allotment (2029) is not accessed by an existing vehicle route. Although the WMP states that "motorized equipment uses will normally only be permitted...where they had occurred prior to the area's designation as wilderness...", the WMP also states that "the general rule of thumb on grazing management in wilderness should be that activities or facilities established prior to the date of an area's designation...should be allowed to remain in place and may be replaced when necessary for the permittee to properly administer the grazing program." Therefore, if there were no practical alternatives, a permit could be authorized for cross-country vehicular access to maintain this windmill.

The impacts to livestock operators would not be significant and would consist primarily of the minor inconveniences of securing permits.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. However, the Cooke's Range WSA could not be managed to preserve existing wilderness values in the long-term. The outside sights and sounds of nonwilderness uses such as mining activities on the non-Federal lands northwest and southwest of Cooke's Peak could degrade natural values and opportunities for solitude within the WSA in the long-term.

The impacts on wilderness values of exploration and development of valid mining claims in the north, east, and south-central parts of the WSA could be significant depending on the extent of activity and locations and types of access.

Vehicular use on the six cherry-stemmed roads in the WSA by recreationists, grazing permittees, and miners would disturb solitude in the vicinity of the roads.

The transplanting of desert bighorn sheep into the WSA would enhance the special wildlife features of the area.

The impacts to wilderness values under this alternative could be significant.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 19,608 acres of public land in the Cooke's Range WSA would be recommended 'unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Over the long-term, the WSA could be fully explored and prospected and additional mining claims could be located and developed. Estimates as to the numbers of new claims that would be located or predictions of the impacts of development are beyond the scope of this report.

Under the No Action/No Wilderness Alternative, wilderness values could be significantly impacted in the long-term. The impacts to air, education/research, and realty actions were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

The wilderness values in the Cooke's Range WSA would not be provided with long-term Congressional protection. Management of the area as proposed in existing BLM land use plans would be subject to administrative change in the long-term.

The impacts of mining operations for locatable minerals on wilderness values within the area could be minimal to major depending on the extent and locations of the activities. Although mining activities would be regulated to prevent unnecessary and undue degradation and reclamation where reasonably practicable would be required, the result of extensive mining development and the construction of the required vehicular access could be the significant degradation of natural values and opportunities for solitude and primitive recreation as well as the partitioning of the WSA into roadless areas less than 5,000 acres.

Unrestricted vehicular use on the existing trails and cherry-stemmed roads in the WSA by recreationists, grazing permittees, and miners would disrupt solitude in the vicinity of these trails and roads.

The transplant of desert bighorn sheep into the WSA would enhance the special wildlife features of the area.

The impacts to wilderness values in the long-term could be significant under this alternative because management of the area would not be ensured through Congressional designation.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There could be a loss of vegetation and topsoil and a small increase in sediment load if mining claim development and construction of new access occurs. Increased sediment would contribute to a shortened usefulness of the existing detention dams on Starvation Draw in the southern part of the WSA. However, since mining activities would be regulated to prevent unnecessary and undue degradation, measures would be required to control erosion and water runoff, and reshaping and revegetation of disturbed areas would be undertaken where reasonably practicable. The overall impacts to water, soils, and vegetation would not be significant.

b. Wildlife

If mining activities for locatable minerals are initiated, a certain amount of wildlife habitat could be destroyed and there would be direct disturbance to animals in the mining regions because of the added activity. Although such activity could affect nesting raptors and, if they are transplanted into the area, desert bighorn sheep, the impacts would not be significant.

c. Visual

The area would be managed as a VRM Class II. In this VRM class, changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. If development of mining claims occurs, the existing visual resources could be degraded. However, the overall impacts on visual resources would not be significant since many of the mining facilities and access routes could be located so that they are effectively screened by the topography and vegetation.

d. Cultural

Although unrestricted access could accelerate the current rate of vandalism to cultural sites, the overall impacts to cultural resources under this alternative would not be significant.

e. Minerals

There would be no impacts on locatable minerals exploration and development. Such activities would be regulated under the Surface Management Regulations (43 CFR 3809) to prevent unnecessary and undue degradation to the land. There would be no economic benefits forgone under this alternative.

f. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. There would be no impacts to livestock grazing.

g. Recreation

Although mining operations for locatable minerals could require the upgrading of existing access or the construction of new access and the improved access could result in an increase in vehicle related recreation, the impacts on recreation would not be significant.

APPENDIX G

COWBOY SPRING WSA (NM-030-007)

I. GENERAL DESCRIPTION

A. Location

The Cowboy Spring Wilderness Study Area (WSA) is located in Hidalgo County, New Mexico in the east half of the southern Animas Mountains. The WSA is approximately 50 miles due south of Lordsburg, New Mexico.

The most recent U.S. Geological Survey (USGS) topographic maps (1982 provisional editions) for the area are the Center Peak, Horse Mountain, and Gillespie Mountain, New Mexico 7 1/2-minute quadrangles.

B. Climate and Topography

The Cowboy Spring WSA is characterized by a semiarid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is 10 to 12 inches. A wide variation in annual totals is characteristic of southern desert climates. Approximately half the annual precipitation occurs in July, August, and September as a result of thundershowers. The showers are generally brief but may be intense and result in flash floods in the arroyos. Snowfall generally averages about 5 inches a year.

During the summer months, daytime temperatures may reach 100°F. Average monthly maximum temperature during July, the warmest month, is in the middle 90's. In January, the coldest month, average monthly minimum temperature is in the low 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

The WSA is dominated by Cowboy Rim, a 6,300 foot elevation ridge running generally north-south through the east half of the WSA and curving to the west in the northern 1/3 of the WSA. Approximately 4 miles of the Cowboy Rim is within the WSA. Within the WSA boundary are the upper reaches of seven canyons that cut into the west side of Cowboy Rim. All of these canyons are tributaries of Walnut Creek, south of the WSA. The most prominent of these canyons is Elephant Butte Canyon, which is about 325 feet deep. Approximately 1 1/2 miles of this canyon are within the WSA. An abrupt 500-800 foot bluff forms the eastern edge of Cowboy Rim. Bluff Creek cuts into the east side of Cowboy Rim in the southeast part of the WSA. Approximately 1/2 mile of Bluff Creek Canyon is within the WSA boundary.

C. Land Status

The WSA contains 6,699 acres of public land. There are no state or private inholdings. (See Map 7 for land status within the WSA boundary.)

D. Access

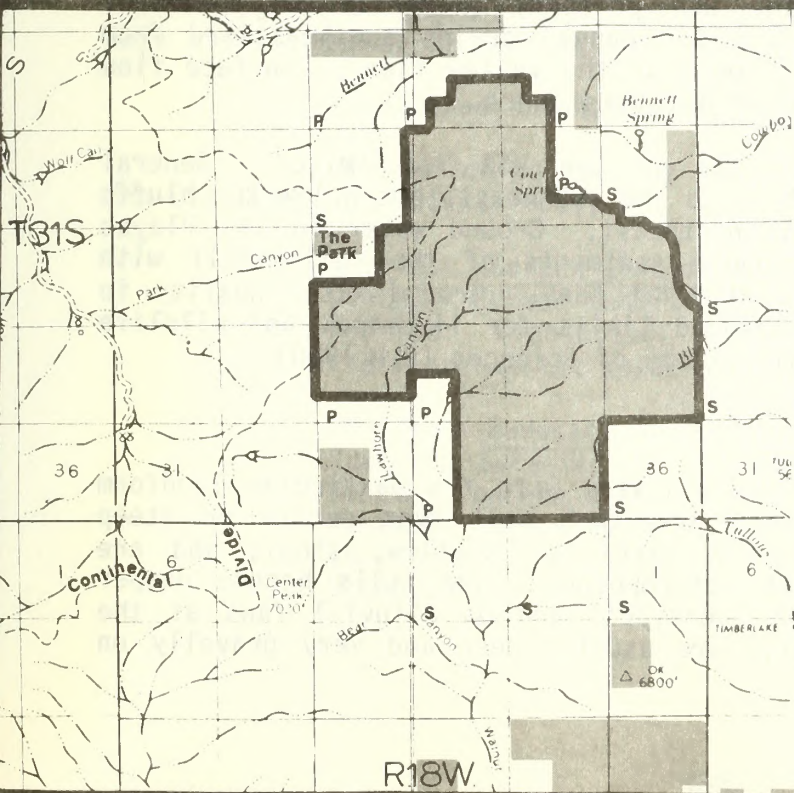
Two routes provide physical access to the Cowboy Spring WSA. Both routes cross private land. There is no legal access to the area. Permission from the private landowners is required to reach the WSA.

Access to the WSA from the west is by way of State Highway 338, 14 miles south of Animas, to County Road C020. The Double Adobe Creek road branches to the south-southeast off of C020 after about 2 miles and terminates at the Double Adobe Creek ranch house. From there, access to the WSA is via 10 miles of pasture roads on the Gray Ranch.

Access to the WSA on the east is by way of State Highway 81, 18 miles southwest of Hachita, to County Road C016. After about 9 miles west on C016 to Young's ranch headquarters, it is 4 1/2 miles southwest via a ranch road to the WSA.



Cowboy Rim.



(NM-030-007)
COWBOY SPRING WSA

MAP 7

Legend

— WSA BOUNDARY

Land Status*

BLM
PRIVATE
STATE

Scale: 1/2 inch=1 mile

* State, Private
Is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982

II. EXISTING RESOURCES

A. Geology

The Cowboy Spring WSA lies within the Cowboy Rim Cauldron which was formed as a result of explosive volcanic activity approximately 33 million years ago (Erb 1979).

The major rock type in the WSA, including Cowboy Rim, consists of Gillespie Tuff, a thick welded tuff sequence which was probably erupted from the Cowboy Rim Cauldera. It is a dense, uniform, tannish pink cliff-former. Except for some Quaternary alluvium on the east side of Cowboy Rim, this is the youngest formation exposed in the WSA. A thin band of Cedar Hill andesite is exposed to the north and northeast of Cowboy Rim. It was erupted from the Juniper Cauldron to the north (Erb 1979). The Bluff Creek formation, intermediate in age between the Gillespie Tuff and the Cedar Hill andesite, is exposed in the southeast portion of the WSA. The Timberlake Conglomerate is exposed on the eastern side of Cowboy Rim. The Conglomerate is late Cretaceous-early Tertiary and consists chiefly of limestone cobble conglomerate interbedded with sandstone, shale, claystone, and tuff.

Structurally, Cowboy Rim is the upthrown block of a normal fault. Older structures in the area are obscured by the Tertiary volcanics.

B. Water

The Cowboy Spring WSA forms a portion of the upper watershed on the western side of the Playas Basin. This drainage is one of several closed basins west of the Rio Grande.

Surface water within the WSA collects primarily in ephemeral tributaries of Walnut Creek. This main channel drains southeastward from the WSA and predominates as sheet flow near the valley floor. Surface flow generally occurs as a result of summer thundershowers.

Information on ground water in the WSA is limited. General direction of ground water movement is to the southeast, but below the bluffs of Cowboy Rim, movement is to the northeast. Ground water in the Playas Valley is obtained from the permeable sediments of the valley-fill with additional potential in the lower alluvial fans. Ground water quality in the Playas Valley is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Soils of the Cowboy Spring WSA vary with the particular landform on which they are found. The most prevalent soil type occurs on steep hillsides at higher elevations where soils are shallow, stony, and are interspersed between areas of rock outcroppings. The soils become deeper and less rocky along the mountain footslopes and on alluvial fans at the base of the mountains. These soils are usually deep and very gravelly on the surface.

D. Vegetation

1. General

The vegetation and associated range sites within the Cowboy Spring WSA consist of the following types:

Vegetation Type	Range Site	Federal Acres
Juniper-mixed mountain shrub	Mountain	6,285
Grass	Mountain	410
Mixed mountain shrub	Gravelly sand	4

Vegetation in the Animas Mountains alternates between grass and mountain shrub depending on slope and exposure. Shrub and tree species are many and varied. These are juniper, agave, sotol, Wright silktassel, sumac, ocotillo, mountain mahogany, oak, beargrass, snakeweed, turpentine bush, and creosote. Grass species are as diverse and include gramas, needle and thread, tobosa, vine-mesquite, foxtail, Hall's panic, threeawns, bush muhly, and lovegrasses.

Grass species (consisting of gramas, vine-mesquite, threeawns, and lovegrasses) are the dominant vegetation types on the west slopes of the mountains. Various shrubs and trees such as juniper, oak, beargrass, and turpentine bush occur in small amounts.

Mixed mountain shrub and tree species on the gravelly sand range site in the sandy bottom of Park Canyon include oak, juniper, and beargrass. Grama grass is also present. This area was identified as a pseudoriparian site and special habitat for wildlife. Only about 4 acres of this site in the upper reaches of Park Canyon are within the WSA boundary.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

1. General

The largest part of the Cowboy Spring WSA is a mixed shrub habitat site. A smaller area of grass mountain is intersected by an oak draw. The proximity of these three sites creates an ecotone effect in which a diverse wildlife community is found.

The rugged rim, which forms the north and east boundaries of the WSA, adds to the value of the habitat as does the isolation of the area.

Golden eagles are fairly common and may nest on the rim cliffs. Mountain lions move through the area. There are healthy herds of javelina and Coues' whitetail deer. The latter is close to the east end of its range in the WSA. Montezuma quail, an uncommon species, have been observed in the WSA. Feral hogs also are found in the area (see Chapter III, Education/Research).

2. Threatened or Endangered Fauna Species

After desert bighorn sheep, a state-endangered species, were transplanted into the Peloncillo Mountains in 1981, two rams left the area and moved into the Animas Range. One has periodically used the rim country of the WSA.

The gray wolf, which is on the Federal endangered species list, historically used the Animas and San Luis Ranges as a travel route. As recently as 2 years ago, a track was found within the WSA which could only be verified as a large canine track. However, the Gray Ranch biologist who found the track feels it is not likely that any domestic dogs were in the area (Steve Dobrott 1981).

Two other state-endangered species, the coatimundi and the Mexican turkey, are possibly found in the WSA. Both have been reported from the Animas Range and could find their preferred habitats in the WSA.

F. Visual

The Cowboy Spring WSA is located within the East Animas Mountains scenic quality rating unit. The unit has a Class B (moderate) scenic quality rating. The landform consists of a complex of hills and low mountains with rocky outcrops. The line of the landform is generally sloping or undulating with occasional broken, angular lines at outcrops. Landform colors are muted tans and browns. Vegetation occurs in dark green clumps and as concentrations along natural drainage courses.

The WSA is in a Visual Resource Management (VRM) Class IV.

G. Cultural

Three prehistoric sites are known from the Cowboy Spring WSA. They have not been fully evaluated but two of them could be significant from a research standpoint to explain the little known use of high altitude sites

by Mogollon groups in the desert Southwest. Based on topography and water sources rather than a verifiable archaeological survey, the Cowboy Spring WSA has moderate potential for cultural resources in comparison to other WSAs in the Las Cruces District. There are also a number of historic cabins near the WSA.

H. Air

Generally, the quality of the air within the Cowboy Spring WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The Phelps-Dodge copper smelter, located in the Playas Valley approximately 9 miles northeast of the WSA, might degrade the air quality of the WSA if atmospheric conditions are such that inversion layers or prevailing wind direction carries the smelter emissions to the WSA. This would occur primarily during the winter months.

The only major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Cowboy Spring WSA.

There is no known geologic model that could be used for assessing the energy minerals potential of this area. According to Erb (1979), the hydrocarbon potential of this area is extremely poor due to its location within the Cowboy Rim Cauldron. The KCM oil and gas wildcat well, drilled in T. 31 S., R. 18 W., Section 3, approximately 1 1/2 miles north of the WSA, had no show of oil or gas. An Energy and Mineral Resource Evaluation submitted during the public review of the Draft Environmental Assessment by the Atlantic Richfield Company (1983) substantiates this evaluation of the oil and gas potential of the area. The evaluation states, "The presence of surface volcanics and igneous intrusions renders this an area of low favorability."

The potential for other leasable energy minerals is unknown at this time. These lands are not classified by the U.S. Geological Survey as having any energy minerals potential. Based on existing information, the Cowboy Spring WSA appears to have low potential for energy minerals.

A protective stipulation for wildlife values would be attached to any energy minerals leases let within this area (BLM Las Cruces/Lordsburg Resource Area MFP Amendment/EIS 1983).

2. Non-Energy Minerals

Some major drainages may contain sand and gravel and aggregate material suitable for fill or general road construction and maintenance. No such deposits have yet been identified and anticipated activities for determining the potential of such resources are unpredictable. However, more accessible sites are located outside of the WSA.

There are no known occurrences of locatable minerals or mining claims in the Cowboy Spring WSA at the present time. Approximately 1 mile to the north is the Gillespie Mining District, containing the Gillespie Mine, the Athena fluorspar prospect, and the Red Hill Mine. These are fault-controlled vein deposits in Paleozoic limestone and Tertiary tuff (Red Hill Mine). The mineral deposits of the Gillespie Mining District appear to be geologically unrelated to rocks of the WSA. Potential economic values, if any, appear to be confined to areas north of the WSA. Additional sampling would be required to assess the full mineral potential, which currently appears to be poor.

B. Livestock Grazing

1. Allotments

Parts of two grazing allotments are within the Cowboy Spring WSA. Some of the Cowboy Spring WSA is unsuitable for grazing by livestock

because of steep slopes. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Timberlake 1066	4,200	1,056	4,087	97%
H. Young 1073	11,624	2,760	2,612	22%
TOTAL			6,699	

Note: ^{a/}Information shown in table reflects only Federal acres and animal unit months (AUMs).

2. Ranch Management

Boundary Fence:

H. Young 1073 and Timberlake 1066 1 1/2 miles

C. Recreation

Although access to Cowboy Spring is limited, some deer hunting takes place in the WSA. The WSA is surrounded by private land and general public hunting is discouraged by the surrounding landowners. The Victorio's Gray Ranch on the east side of the WSA leases hunting rights on its private land. Some of these hunters probably spill over onto the public land within the WSA, especially in the area along the vehicle trail which provides access to the Park, an old homestead adjacent to the northwest boundary of the WSA.

The Continental Divide passes through the Cowboy Spring WSA. A specific route through southwestern New Mexico has not yet been identified for the Continental Divide National Scenic Trail; however, locating the Trail on the actual Divide through the Cowboy Spring WSA is an alternative.

D. Education/Research

Dr. V. W. Howard of New Mexico State University is studying feral hogs in the Animas Mountains. Joe Cook of the University of New Mexico has been studying vertebrates and the effects of fire in the Animas Mountains. This research involves a wide area including parts of the WSA.

Additional information gathered in response to public comments received during the public review of the Draft Environmental Assessment and Wilderness Analysis Report indicates that the Cowboy Spring area meets the criteria for a Research Natural Area (RNA) as defined in 43 CFR 8223. A RNA is defined as an area that is established and maintained for the primary purpose of research and education because the land has one or more of the following characteristics: (1) a typical representation of a common plant or animal association; (2) an unusual plant or animal association; (3) a threatened or endangered plant or animal species; (4) a typical

representation of common geologic, soil, or water features; or (5) outstanding or unusual geologic, soil, or water features. The Cowboy Spring area meets (1), (2), and (3) of the alternative criteria for a RNA.

The western boundary of the Cowboy Spring WSA is approximately 2 to 3 miles from the eastern edge of the 46,000-acre area of private land within the Animas Mountains identified as the top-rated "proposed unique ecosystem" by the U.S. Fish and Wildlife Service (USFWS) in their "Concept Plan Unique Wildlife Ecosystems New Mexico" (1979). The ultimate objective of the Unique Wildlife Ecosystems Program (UWEP) was "the preservation of unique and/or nationally significant wildlife ecosystems which are required to maintain viable wildlife communities within their historic range." At the time Concept Plans were prepared, the USFWS' ultimate goal was to eventually acquire lands identified as unique ecosystems. However, since that time, the USFWS has cancelled all plans for activities or acquisition in the Animas Mountains (Dunkeson 1984).

The Animas Mountains, including Cowboy Spring, are located at a transition point between the Colorado Plateau to the north and the Sierra Madre Occidental of Mexico to the south. As a result of this location, a wide variety of plant and animal species representative of both of these provinces can be found in the Animas Mountains.

The USFWS report identified five major community or habitat types in the 46,000-acre proposed unique ecosystem project area to the west of Cowboy Spring. The habitat types in the project area are: (1) grassland (dominated by tobosa grass, black grama, and some mesquite); (2) lower encinal (principally Mexican blue oak, Arizona white oak, emory oak, and alligator juniper); (3) upper encinal (principally netleaf oak, silverleaf oak, alligator juniper, Mexican pinyon pine, Chihuahua pine, Mexican white pine, and Apache pine); (4) montane forest (principally ponderosa pine, Douglas fir, and Gambel oak); and (5) riparian woodland (primarily Arizona sycamore, velvet ash, Apacheplume, and snowberry). (Note: The habitat type descriptions used by the USFWS are not equivalent to the standard habitat sites identified by BLM in their Integrated Habitat Inventory Classification System (IHICS). IHICS information was used in preparation of the wildlife sections of this report.) This diversity of habitat types does much to account for the diversity of flora and fauna in the project area. Over 48 species of mammals, 110 species of birds (at least 85 of which are breeding), 22 species of reptiles and amphibians, and 36 species of butterflies have been found in the project area as well as approximately 715 species of plants, representing over 25 percent of the flora of New Mexico.

Two of the community or habitat types described above, grassland and lower encinal, plus an additional type, xeric shrubland, can be found in the Cowboy Spring WSA (Applegarth et al. 1980). Xeric shrubland is characterized by turpentine bush and broom snakeweed and often includes whitethorn, agave, sage species, grama grasses, sotol, ocotillo, muhlys, beargrass, prickly pear, mesquite, and yucca. The Cowboy Spring area provides habitat for many of the interesting and unique species found in the main part of the Animas Mountains to the west, such as the Coues' whitetail deer, Mearns quail, and Yarrow's spiny lizard, as well as the state-listed coatimundi and Mexican turkey.

Because the Cowboy Spring area is located along a transition zone between the Madrean evergreen woodlands of the Animas Mountains and the semi-desert grasslands to the east, the WSA area also hosts a unique assemblage of flora and fauna and provides scientific and education opportunities. In addition, the area is the largest BLM-owned parcel of Madrean evergreen woodland in the state.

The management objectives of the Cowboy Spring RNA would be fivefold: (1) to preserve a sample of the Madrean evergreen woodland community and the unique vegetation and wildlife associated with the area; (2) to provide research and educational opportunities for scientists, educators, and others in the observation and study of this particular ecosystem. Scientists and educators would be encouraged to use the area in a manner that is nondestructive and consistent with the purpose for which the area is established; (3) to preserve the full range of genetic diversity for native plants and animals; (4) to provide a basis for organized research and exchange of information on RNAs; and (5) to allow nonmotorized recreation activities as long as such activities are compatible with the scientific, research, and educational objectives for the area.

E. Realty Actions

A temporary State Aid Withdrawal was located within the Cowboy Spring WSA at the time the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983) was released. The State of New Mexico completed their land selection and the withdrawal was reviewed by the BLM. The revocation of the withdrawal became effective October 7, 1983.

F. Wildlife

There are no existing wildlife developments in the Cowboy Spring WSA. The WSA is a potential transplant site for desert bighorn sheep, although there is a problem because the ewes in the Peloncillo Mountains herd are pneumonia carriers. Sheep from a Cowboy Spring herd could move between the Peloncillo Mountains, about 25 miles to the northwest, and the Big Hatchet Mountains, about 15 miles east, carrying pneumonia to the Big Hatchet Mountains herd. According to Andy Sandoval of the New Mexico Department of Game and Fish (1982), if a pneumonia vaccine were developed, the Cowboy Spring Rim could be considered as a likely transplant site.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Cowboy Spring WSA is natural. The two fences within the area are constructed of wooden posts and are substantially unnoticeable.

A two-track vehicle trail enters the WSA from the southwest, providing the only access to the Park, an old homestead adjacent to the northwest boundary. Approximately 1 mile of the trail crosses the western part of the WSA.

With the exception of the imprints of man described above, the Cowboy Spring WSA is virtually pristine and appears to have been affected only by the forces of nature.

b. Solitude

The Cowboy Spring WSA provides outstanding opportunities for solitude. Several factors affect the quality of these opportunities.

Most of the area is rugged and the remoteness of the area from any habitation enhances opportunities for solitude. Although the topographic relief and vegetative screening provide secluded niches where visitors might escape the sights and sounds of others in the WSA, the small size of the area would make it difficult to avoid other visitors to the area. The Wilderness Study Policy (BLM 1981) specifies size as a feature to be considered in evaluating the quality of an area's outstanding opportunities for solitude and states that "the emphasis is on the opportunities a person has to avoid the sights, sounds, and evidence of other people within a particular WSA..." Certainly, it is more difficult to avoid other people in an area of limited size than it would be in a large area.

The Cowboy Spring WSA is surrounded on the north, south, and west by vast undeveloped areas of the rugged and, in places, densely vegetated Animas Mountains. The topographic aspect of the Cowboy Spring WSA, with its highest elevations along Cowboy Rim in the east and major drainages running generally south-southwest towards Walnut Creek, tends to focus attention on the main peaks of the Animas Range to the west and southwest. These peaks reach 8,000 feet at a distance of approximately 7 miles from the WSA. Because of its topographic aspect and small size, perceptions of outstanding solitude within most of the Cowboy Spring WSA (west of Cowboy Rim) are, to a large degree, dependent on the surrounding undeveloped non-Federal lands of the Animas Mountains.

c. Primitive and Unconfined Recreation

This WSA provides outstanding opportunities for primitive and unconfined recreation. The rugged topography, isolation, and lack of

legal access preclude the use of vehicles in the area for motorized recreation. Opportunities exist for hiking, horseback riding, deer hunting, climbing, and photography. The opportunities for dayhiking are excellent since the area can be traversed in a day. Although numerous small canyons are available for exploration from a base camp, backpacking and horsepacking opportunities are limited by the size of the WSA. Because of the small size of the WSA, the quality and diversity of recreation opportunities is less than it would be for a similar area of larger size.

The vast undeveloped areas of the Animas Mountains that surround the WSA on the north, south, and west influence the wilderness values within the WSA. These surrounding lands increase the recreational appeal of the Cowboy Spring WSA and the quality of opportunities for primitive recreation are, like solitude, to a large degree, dependent on the surrounding undeveloped non-Federal lands.

2. Special Features

The Cowboy Spring WSA contains special ecological and cultural features of scientific and educational value.

The ecological features include both vegetation and wildlife values. The WSA provides habitat for a Bureau sensitive plant species proposed for Federal listing and a plant species of special concern to the New Mexico State Heritage Program (see Chapter II, Vegetation). The presence of several different wildlife habitat sites within the WSA accounts for the wide diversity of wildlife found in the area. The area also provides habitat for the coatimundi and Mexican turkey, which are both state-endangered species (see Chapter II, Wildlife). The scientific and educational value of the WSA is evidenced by the fact that researchers at New Mexico State University and the University of New Mexico are presently engaged in wildlife-related studies in the Animas Mountains (see Chapter III, Education/Research).

The cultural features of the WSA consist of three prehistoric sites that may be of scientific and educational value (see Chapter II, Cultural).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) system classifies this area as being in the Mexican Highlands Shrubsteppe Province. The potential natural vegetation is oak-juniper woodland.

The general nature of the Bailey-Kuchler System fails to show specific vegetation types of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

Vegetation Type	Acres
grama-tobosa shrubsteppe	410
mountain mahogany-oak scrub	6,289

b. Distance from Population Centers

The WSA is approximately 4 hours driving time from Las Cruces, New Mexico; 5 hours from El Paso, Texas; 7 hours from Albuquerque, New Mexico; 5 hours from Tucson, Arizona; and 7 hours from Phoenix, Arizona.

B. Manageability

Three factors potentially affect the manageability of the Cowboy Spring WSA: the land ownership patterns surrounding the WSA, the potential for visitor concentrations into accessible areas, and the lack of legal access. The surrounding land ownership patterns and the potential for visitor concentrations into accessible areas are manageability concerns because of the internal topography in relationship to the small size of the WSA.

The WSA is almost totally surrounded by state and private lands. Because of the internal topographic configuration of the WSA and its fairly small size (6,699 acres), nonwilderness or nonconforming uses on nonpublic lands along the WSA boundary could negatively affect wilderness values within the WSA. Developments on the non-Federal lands of the Animas Range west or southwest of the WSA would be noticeable from the central part of the WSA because of the topographic aspect of the area, which focuses attention on the Animas Range. Because the quality of opportunities for solitude and primitive recreation are, to a large degree, dependent on the panorama of the Animas Range to the west and southwest, the sights or sounds of nonwilderness activities on these lands could degrade the quality of these opportunities. Similarly, activities to the east or north of the WSA could be seen or possibly heard from the top of Cowboy Rim as well as along lower elevations on the steep east or north slopes of the Rim. For example, the Gillespie Mining District lies to the north of the WSA, with the Gillespie Mine less than 2 miles from the northwest WSA boundary. Extension or acceleration of the mining activity in this area would be noticeable from the top of Cowboy Rim. Because BLM has no control over activities on surrounding lands, it is difficult to assess the capability of managing the Cowboy Spring WSA to preserve wilderness values in the long-term.

A second manageability concern involves the possibility of visitors being concentrated in specific areas of the WSA and the possible negative effects on the quality of solitude and primitive recreation opportunities. This is also a manageability concern because of the internal topography and small size of the Cowboy Spring WSA. The easiest access into the WSA at present is from the southwest. Entering the WSA here allows the hiker to visit the central portions of the area without scaling the steep

east side of the Cowboy Rim. Because the area is fairly small and many visitors would probably choose to enter the area from the southwest, there is a possibility that visitors would tend to concentrate in an area of about 4,000 acres south and west of Cowboy Rim. There are seven major ridges and portions of seven canyons in this area of the WSA. The longest of these ridges is approximately 2 1/4 miles in length and the longest stretch of canyon, approximately 1 1/2 miles. Visitors would tend to be funneled along the ridges or in the canyons. As the numbers of visitors increased, the quality of opportunities for solitude would diminish as would the quality of primitive recreation opportunities. Extensive management measures involving permits and patrols would be required to ensure the availability of outstanding opportunities for solitude and to protect the existing quality of primitive recreation opportunities.

A third and less significant manageability concern is that of legal access to the WSA. At the present time, there is no legal access. Permission must be obtained from surrounding landowners to cross private land around the area. Therefore, the accessibility or availability of the WSA for wilderness purposes, such as primitive recreation, is not guaranteed. Easements or rights-of-way would have to be obtained to guarantee access to the area.

The Cowboy Spring WSA could be managed to preserve existing wilderness values as long as the non-Federal lands on the east slopes of the Animas Range remain undeveloped and natural. However, management of the area as wilderness would require more extensive and direct supervision than would a larger, similar area.

V. PUBLIC INVOLVEMENT OVERVIEW

Public comments were received on the Cowboy Spring unit during the public review periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). Maps, photographs, road affidavits, and geological information on the oil and gas potential of the area were included with the comments.

Comments opposing wilderness review of the area dealt with resource and management conflicts such as visitor versus rancher, oil and gas potential, and conflicts with the Clean Air Act and the Phelps-Dodge copper smelter, 9 miles north of the WSA in the Playas Valley.

Comments supporting wilderness review of the area indicated that the unit offered opportunities for solitude because of its remoteness and offered outstanding recreation opportunities because of its ruggedness. Several comments identified the supplemental values of scenery and ecosystem relationships in support of the area.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), 60 public inputs were received on the Cowboy Spring WSA. Nine of the inputs expressed opposition to wilderness designation for the Cowboy Spring WSA. Three of these inputs listed no supporting reasons and one input expressed agreement with the rationale outlined in the Draft Wilderness Analysis Report (WAR). The remainder of the comments addressed the mineral potential of the area. Information submitted by industry regarding mineral potential has been incorporated into the appropriate sections of this Final WAR.

The vast majority of the inputs (29 personal letters and 27 form letters) favored wilderness designation for the Cowboy Spring area. Two primary categories of supporting reasons were cited: (1) disagreement with BLM's assessment of potential wilderness manageability conflicts and (2) the ecological values of the area.

Comments on manageability included expressions of disagreement with the use of manageability conflicts to support a nonwilderness recommendation and general statements that the area is manageable. Many comments specifically addressed certain manageability issues discussed in the WAR, such as access and surrounding non-Federal lands. Observations regarding access were varied and included: the area is manageable because access is poor; accessibility is not a wilderness requirement; easements for access can be acquired; and the lack of legal access is a major problem regardless of wilderness status.

Comments concerning surrounding non-Federal lands were also varied. These comments included statements such as; "work towards making the area surrounding the WSA enhance wilderness," "past and present owners of adjacent private land have shown responsible attitudes to land management and conservation. Designation of Cowboy Spring would enhance this approach," and "manageability concerns are based on speculation about future uses." These comments fail to address BLM's contention that because of the small size and internal topography of the Cowboy Spring WSA, the wilderness values within the WSA are to a large degree dependent on the surrounding

non-Federal (and unquestionably magnificent) lands of the Animas Mountains, and because BLM has no control over the surrounding lands, BLM cannot guarantee that the Cowboy Spring area could be managed in the long-term to preserve wilderness values. The surrounding non-Federal lands represent a valid manageability concern.

The second major category of pro-wilderness comments concerned the ecological values of the area. General comments included wildlife and plant habitat, unique and threatened wildlife, and biological and zoological values. The New Mexico Natural History Institute noted that "this small area of Madrean woodland is the best remaining Federally-owned piece of the Animas Mountains--The top-rated 'unique ecosystem' in New Mexico in the (U.S.) Fish and Wildlife Service's survey." The New Mexico Department of Natural Resources added that Animas Mountain is a top priority for future acquisition or protection by the Nature Conservancy.

Although the many comments received in support of wilderness designation for the Cowboy Spring WSA did not change BLM's evaluation of the area's suitability for wilderness designation, the comments did prompt reconsideration of the appropriateness of some form of special designation as outlined in Chapter III, Education/Research, and Chapter VI, No Wilderness, of this WAR. The No Wilderness Alternative was formulated and analyzed in response to these comments.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 6,699 acres of public land within the Cowboy Spring WSA would be recommended suitable for wilderness designation. (See Map 7 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts on cultural resources, air, education/research, and realty actions in the Cowboy Spring WSA would be clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

There has been no energy minerals production in the Cowboy Spring WSA. Because the potential appears to be low, impacts to the energy minerals industry would be minimal in the short-term.

It is assumed that exploration for energy minerals under the mineral leasing laws would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the oil and gas potential in the WSA or for development and production.

The potential for locatable minerals in the Cowboy Spring WSA also appears low. Since there is currently no activity and the potential is low, the impacts would be minimal in the short-term.

After wilderness designation, additional exploration for locatable minerals outside of existing claims boundaries would not be allowed. The minerals industry could be affected in the long-term.

Based on existing information, it appears that wilderness designation would not have significant impacts on mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, motorized access on existing vehicle trails in the WSA would not be allowed. Therefore, the 1 mile of vehicle trail on the west side of the WSA would be closed and rehabilitated, which would result in a slight increase in vegetative ground cover. The increase in vegetative ground cover could slightly reduce soil erosion.

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation. The impacts of the added

protection of wilderness designation would not be significant since existing and proposed activities under nonwilderness management would not result in extensive surface disturbance.

b. Wildlife

Under the All Wilderness Alternative, desert bighorn sheep could be transplanted in the area. Restrictions on surface disturbing and mechanized activities would provide protection for wildlife habitat. Since there are no existing or proposed activities that would result in surface disturbance or habitat destruction under nonwilderness management, the added protection of wilderness designation would not result in significant impacts on wildlife.

c. Visual

Existing visual resources would be protected since the area would be managed as a Visual Resource Management (VRM) Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Generally, motorized access within the designated area would not be allowed. The vehicle trail through the western part of the WSA provides access to the rangeland developments at the Park just outside the WSA boundary. Since this trail would be closed and rehabilitated under wilderness management, alternative access to the Park would be required. The impacts on the livestock operator (Timberlake [1066]) of locating and possibly constructing an alternative access route to the Park would not be significant. General impacts to both livestock operators in the Cowboy Spring area would consist primarily of inconveniences resulting from the prohibition of motorized vehicles in the designated area. These impacts would not be significant.

e. Recreation

There would be a negligible impact on the current recreation use in the area. Hunters would be denied motorized access on the approximately 1 mile of vehicle trail which provides access into the west side of the WSA. The impacts on recreation would not be significant.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the Cowboy Spring WSA with significant long-term Congressional protection. However, three factors could impact the ability of the BLM to manage the area as wilderness in the long-term. Because of the WSA's fairly small size and topographic aspect, nonwilderness uses on the non-Federal lands that almost totally surround the area could degrade wilderness values. Due to the small size and topography of the area, wilderness visitors could naturally tend to concentrate in the areas south and west of

Cowboy Rim. As visitor numbers increased, the quality of solitude opportunities would diminish. Extensive management measures such as permits and patrols would be required to ensure the availability of outstanding opportunities for solitude. Access to the area is controlled by surrounding landowners. Wilderness recreationists could be denied access to the area.

The magnitude of the impact on wilderness values caused by the above manageability factors would depend on whether one or all of the described circumstances come about.

The transplanting of desert bighorn sheep would enhance the special wildlife features of the Cowboy Spring area.

B. No Action

Under the No Action Alternative, the entire 6,699 acres of public land within the Cowboy Spring WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The area would be managed under existing land use plans which do not prescribe any special designation or management other than leasing the area for energy minerals with a protective stipulation for wildlife values.

Under the No Action Alternative, the impacts on wilderness values could be significant. Impacts on cultural resources, air, education/research, realty actions, and nonprimitive types of recreation in the Cowboy Spring WSA would be clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Cowboy Spring WSA would not be provided with long-term Congressional protection. Since existing and proposed BLM plans do not identify any activities which would impair wilderness values, the entire area would probably retain its natural character in the short-term. Continuation of vehicle use on the vehicle trail into the western part of the WSA would slightly impact opportunities for solitude and primitive recreation in that part of the area. The transplanting of desert bighorn sheep would enhance the special wildlife features of the area. However, since management of the area as specified in land use plans would be subject to administrative change, the impacts to wilderness values under this alternative could be significant in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The 1 mile of vehicle trail on the west side would remain open to motorized access. The impacts to water, soils, and vegetation, including a Bureau sensitive plant species proposed for Federal listing and a special concern element identified by the New Mexico State Heritage Program, would not be significant.

b. Wildlife

Desert bighorn sheep could be transplanted in the area. The impacts on wildlife and wildlife habitat under this alternative would not be significant.

c. Visual

Under the No Action Alternative, the Cowboy Spring area would be managed as a VRM Class IV. Although significant changes in the basic elements of the landscape as a result of management actions could be permitted under a VRM Class IV, existing and proposed BLM plans do not identify any activities which would impair visual resources. Under the management prescribed in BLM plans, the existing Class B scenic quality would be maintained. The impacts to visual resources under this alternative would not be significant.

d. Minerals

Under this alternative, energy minerals leases let in the area would be covered by a protective stipulation for wildlife values because the area is a potential desert bighorn sheep transplant site. Surface use or occupancy within the area could be restricted. Impacts on energy minerals would not be significant since potential is low.

There would be no impacts on locatable minerals exploration and development. Such activities would be regulated under the Surface Management Regulations (43 CFR 3809) to prevent unnecessary and undue degradation to the land.

e. Livestock Grazing

There would be no impacts on livestock grazing under this alternative.

C. No Wilderness

Under the No Wilderness Alternative, the entire 6,699 acres of public land within the Cowboy Spring WSA would be recommended nonsuitable for wilderness designation.

Under this alternative, existing land use plans would be amended to allow administrative designation of the entire area as a Research Natural Area (RNA) under the authority of 43 CFR 8223. The management objectives for the Cowboy Spring RNA would be as follows: (1) to preserve a sample of the Madrean evergreen woodland community and the unique vegetation and wildlife associated with the area; (2) to provide research and educational opportunities for scientists, educators, and others in the observation and study of this particular ecosystem. Scientists and educators would be encouraged to use the area in a manner that is nondestructive and consistent with the purpose for which the area is established; (3) to preserve the full range of genetic diversity for native plants and animals; (4) to provide a basis for organized research and exchange of information on RNAs; and (5) to allow nonmotorized recreation activities as long as such activities are

compatible with the scientific, research, and educational objectives for the area.

Under this alternative, the impacts on wilderness values and education/research could be significant. Impacts on cultural resources, air, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

Under the No Wilderness Alternative, the Cowboy Spring WSA's wilderness character and special features would be substantially maintained under management as a RNA as long as the area is administratively designated, since destructive uses of the RNA would not be allowed. Management as a RNA would enhance the scientific and educational special features of the area since only those activities consistent with the purposes of the RNA would be authorized. However, since the area would not be provided with Congressional protection, the impacts to wilderness values could be significant in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Since the management objectives of the RNA include preservation of the Madrean evergreen woodland community and restriction of destructive uses in the area, the existing water, soils, and vegetation in the area would be protected. However, the impacts of the added protection of RNA designation would not be significant since existing and proposed activities under non-RNA management would not result in extensive surface disturbance.

b. Wildlife

Desert bighorn sheep could be transplanted in the area which could enhance the research and educational values of the RNA. Although existing wildlife and wildlife habitat would be protected, the impacts would not be significant.

c. Visual

Under the No Wilderness Alternative, the impacts to visual resources would be the same as those described under the No Action Alternative.

d. Minerals

Under this alternative, the impacts to mineral resources would be the same as those described under the No Action Alternative.

e. Livestock Grazing

There would be no impacts to existing livestock grazing under this alternative.

f. Recreation

Recreation activities would be allowed as long as they did not conflict with the research objectives for the area. The impacts on existing recreation activities would not be significant since recreation use in the area at present is minimal.

g. Education/Research

Education and research opportunities would benefit from designation of the Cowboy Spring RNA. New Mexico's "bootheel" area is important from a biological standpoint and therefore of interest to scientists and educators. However, most of the "bootheel" is in private ownership and access into areas of interest is restricted. The impacts of designating the Cowboy Spring RNA could be significant for education and research.

APPENDIX H

FLORIDA MOUNTAINS WSA (NM-030-034A)

I. GENERAL DESCRIPTION

A. Location

The Florida Mountains Wilderness Study Area (WSA) lies in the southeast quadrant of Luna County, approximately 10 miles southeast of Deming, New Mexico.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Capitol Dome, South Peak, Florida Gap, and Gym Peak, New Mexico quadrangles. All four of these maps are at the 7 1/2-minute scale.

B. Climate and Topography

The Florida Mountains WSA is characterized by an arid, continental climate. Annual precipitation totals average between 8 and 10 inches, with 12 to 14 inches at elevations greater than 6,000 feet. Over 50 percent of the total occurs from July through September as a result of high intensity, short duration thundershowers.

Temperatures reach a maximum in July with average afternoon temperatures ranging from 90° to 100°F. In the higher elevations, the temperatures are typically 10° to 15° cooler. Minimum temperatures during the winter months range from the low 20's to near freezing. Winter daytime temperatures tend to be mild, ranging from 35° to 50°F.

Surface winds are predominantly from the southeast in summer and from the northwest in winter, but local surface wind direction will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

The Florida Mountain range rises over 2,800 feet above the surrounding basins and dominates the landscape for miles around. Several peaks have elevations of over 7,000 feet; among them are Florida, South, and Gym Peaks. The mountain range is approximately 10 miles long, trending north and south, and up to 5 miles wide. The topography is rugged with steep canyons and near vertical cliffs. Alluvial fans slope toward the valley floors on all sides of the mountain range.

C. Land Status

The Florida Mountains WSA contains 22,336 acres of public land. There are 80 acres of state inholdings and approximately 30 acres of private inholdings within the WSA boundary. The private inholding is a patented mining claim. (See Map 8 for land status.)

MAP 8 FLORIDA MTS. (030-034)

Legend
— WSA BOUNDARY

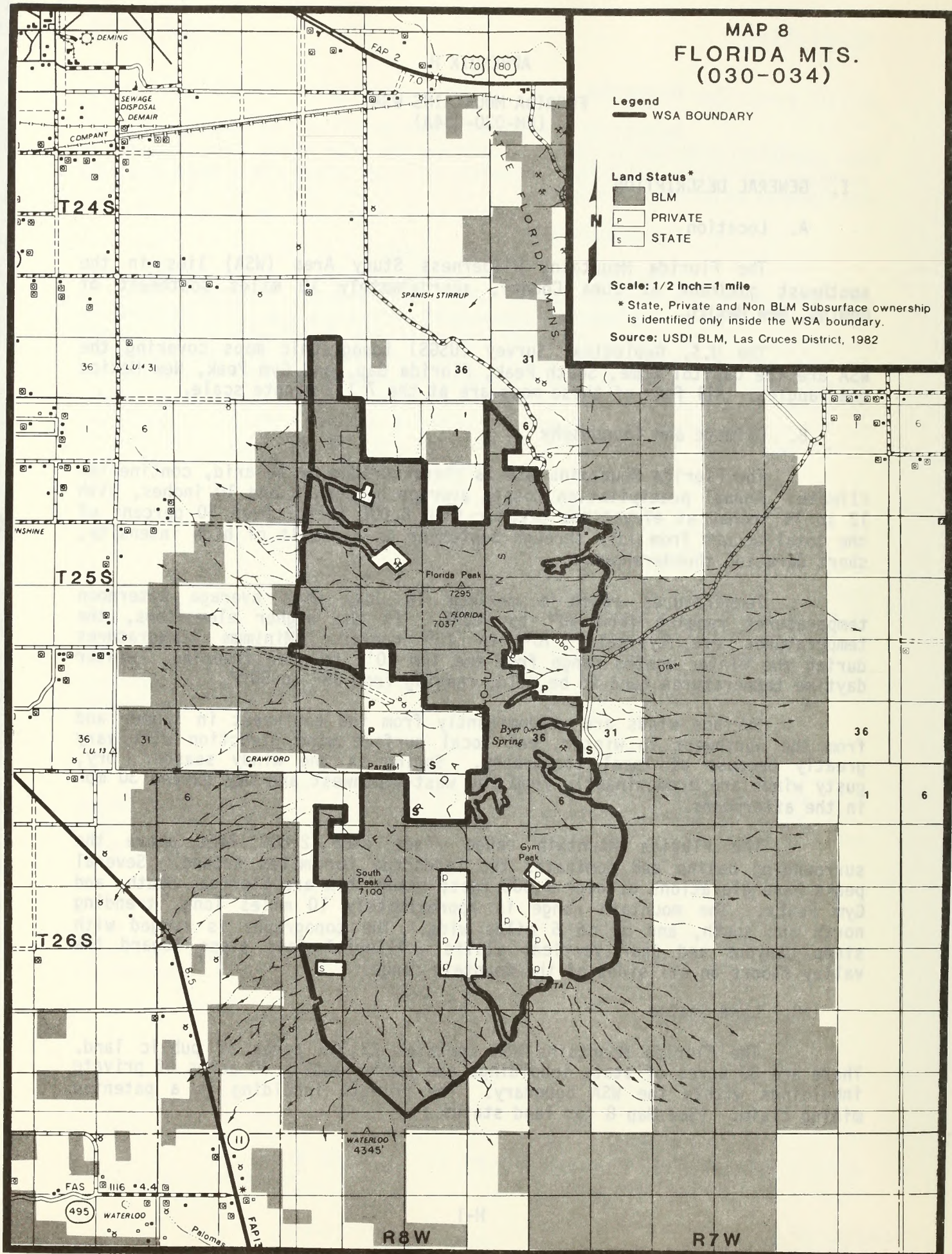
Land Status*

- BLM
- P PRIVATE
- S STATE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



D. Access

The Florida Mountains WSA is legally accessible from County Road B023. Approximately 4 miles south of Deming, New Mexico on State Highway 11, County Road B023 runs due east towards the Little Florida Mountains and Rockhound State Park. After about 6 miles, B023 turns to the southeast for approximately 5 miles. The County maintained road ends on the northeast boundary of the WSA. Additional physical access along the east and south boundaries of the WSA is available from the ranch road continuing south from B023.

II. EXISTING RESOURCES

A. Geology

From early Paleozoic through Mississippian time, the Florida Mountains area was a part of a stable shelf environment. During Pennsylvanian time, the Pedregosa Basin formed to the west and an area known as the "Florida Islands" emerged near the Florida Mountains area. Throughout most of the Mesozoic era, this area remained a topographic high.

Orogenic activities beginning in the late Cretaceous period formed the basic internal structure of the Florida Mountains. Thrust faults and steeply dipping reverse faults of Laramide age are abundant in the southern Florida Mountains. The most conspicuous of these is the northwest trending, steeply dipping reverse fault that thrusts what appears to be Precambrian granitic rocks over Paleozoic sediments. Complex thrusting is also evident in the southern part of the range. North-south block faulting during the Tertiary period created the present uplifted mountain along boundary faults. Vertical displacement along these faults appears to be about 4,000 feet (Corbitt 1971).

The oldest rocks in the Florida Mountains are metamorphic rocks of Precambrian age. Approximately 3,000 feet of the Paleozoic sediments overlie these basement rocks. The sediments are primarily shelf carbonates with only two clastic units. Cretaceous and Tertiary conglomerates and siltstones represent the other sediments in the Florida Mountains.

A significant portion of the Florida Mountains consists of igneous rocks. The northernmost intrusive body is a granite dated at 450 to 600 million years in age. A central mass consists primarily of syenite. The southern portion of the range appears to be a large granitic body of Precambrian age. Tertiary volcanics are dominant in the northern end of the mountains. Numerous rhyolite dikes of late Tertiary age cut east-west across the northern half of the range.

B. Water

The Florida Mountains WSA is situated within the southeast portion of the Mimbres Basin, a closed basin with interior surface water drainage.

Surface water within the WSA drains into the Mimbres Basin through an ephemeral stream system. Principal drainages include Spring and Windmill Canyons to the northeast; Capitol Dome Draw and Mexican Canyon to the northwest; and Copper Kettle, Box, and Victorio Canyons to the southeast. These ephemeral streams flatten out below the alluvial fan slopes and become a nonintegrated system of washes and arroyos in the valley floors. There are several scattered springs in the WSA; however, the springs' contribution to surface flow is limited. They are important locally in support of riparian vegetation.

Ground water in the WSA is available primarily from bolson deposits on the alluvial fans coming off the Florida Mountains. Secondary aquifers consist of Tertiary volcanics and Cretaceous shales, sandstone, and limestone. Water yields from these secondary aquifers are generally small.

The ground water reservoir is recharged mainly during flood runoff by infiltration in ephemeral stream channels. Ground water movement generally follows the direction of major drainage channels towards the valley floors. Water quality in the area is generally very good with low total dissolved solids and low dissolved metals content.

C. Soils

Two major soil types occur in the Florida Mountains WSA. Soils at higher elevations are residual, ranging in depth from very shallow to moderately deep on slopes from 0 percent to over 70 percent. The soils are typically very cobbly and stony loams interspersed between areas of rock outcropping located on ridgetops, ledges, and cliffs.

At lower elevations, soils formed from mixed materials on old alluvial fans along the footslopes of the mountains. Slopes range from nearly level to about 10 percent. The soils are moderately deep to deep with textures ranging from very gravelly sandy loams to gravelly clay loams.

In addition to the two major soil types, the ephemeral streambeds in the canyon bottoms typically contain sandy soils stratified with gravels and cobbles. Texture and depth of the soils are variable depending on the amount of material deposited or removed by each flow of water.

D. Vegetation

1. General

The vegetation and associated range sites within the Florida Mountains WSA consist of five major types:

Vegetation Type	Range Site	Federal Acres
Grass-mixed desert shrub	Hills	12,907
Snakeweed-mixed desert shrub-grass	Gravelly loam	3,413
Creosote-grass	Gravelly	4,411
Snakeweed-mesquite-yucca-other shrubs and trees	Sandy	1,289
Other shrubs and trees-mixed desert shrub	Gravelly sand	316

Many grass species are present in the Florida Mountains WSA. Gramas and tobosa are the most prevalent grass species. Associated shrub species are varied and diverse. The main shrub and tree species on the mountain slopes include snakeweed, sumac, creosote, sotol, beargrass, mesquite, tarbush, prickly pear, feather peabush, yucca, and juniper.

Snakeweed, mixed desert shrubs, and grasses are the dominant vegetation on the gravelly loam areas on slopes around the base of the mountains. The mixed desert shrubs include mesquite, yucca, sumac, Mormon tea, spicebush, mariola, range ratany, and tarbush. Many other shrubs occur

in small quantities. Major grass species present include black grama, tobosa, sideoats grama, threeawns, bush muhly, cane bluestem, and fluffgrass.

The gravelly soils on the south and east slopes of the mountains are dominated by creosote, snakeweed, and mariola. Associated grass species include gramas, threeawns, fluffgrass, and tridens.

Sandy soils occur in the flats surrounding the mountain range. Snakeweed, yucca, mesquite, and other shrubs and trees are the dominant vegetation types. Other shrub species include Mormon tea, Wright's buckwheat, range ratany, sumac, creosote, rabbitbrush, spicebush, fourwing saltbush, and whitethorn acacia. Grass species include tobosa, threeawns, cane bluestem, and sideoats grama in small quantities.

The gravelly sand range sites identified in lower elevation drainages are pseudoriparian and have been identified as having important wildlife values. Mixed desert shrubs and other shrubs and trees are the dominant vegetation types on this range site. These vegetation types include hackberry, Mormon tea, snakeweed, Apacheplume, sumac, mesquite, sotol, juniper, oak, desert willow, ocotillo, mimosa, pinyon, and walnut. Some grasses occur in small quantities.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Coryphantha orcuttii var. koenigii - Koenig's coryphantha

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Grows on black limestone on south facing slopes, usually in small, dense clusters at approximately 5,000 feet.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to overcollection.

Species: Pinus edulis var. fallax

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Scattered along canyon bottoms with Apacheplume and junipers.

Species: Sphaeralcea wrightii - Wright's globemallow
Status: Selected by the New Mexico State Heritage Program as a special concern element.
Habitat: Rocky slopes in arid grasslands or deserts from 4,600 to 6,000 feet.

E. Wildlife

1. General

The upper elevations of the Florida Mountains WSA contain mixed shrub mountain habitat sites with inclusions of pinyon-juniper sites. A variety of shrub sites are found around the edge of the mountains including creosote, mixed shrub, half-shrub, and snakeweed. Several pseudoriparian sites were identified in lower elevation drainages.

The Florida Mountains are fairly well-watered for a desert range. A number of springs and seeps are found between 5,000 and 6,000 feet. Some of these have riparian vegetation associated with them, such as cattails, willows, and grapevines. Water is also available high on the mountain in several locations at umbrella catchments, seeps, and a trough filled by a miner. Other special habitat features which encourage wildlife use are the extensive cliffs of the Florida Mountains. Prairie falcons and golden eagles both nest on these cliffs.

The wildlife community is similar in most ways to other desert mountain ranges such as the Cooke's Range and the Organ Mountains. The Florida Mountains host a desert mule deer population, prairie falcons, eagles, red-tailed hawks, great horned owls, and nesting birds typical of mixed shrub mountain communities such as ladder-backed woodpeckers, canyon wrens, and black-chinned sparrows.

The wildlife community of the Florida Mountains also differs from nearby ranges. There is a small javelina population and the Florida Mountains are home to an introduced herd of Persian ibex. Fifteen individuals of this exotic species were released in the Florida Mountains in 1970. Seventy-three more animals were released at later dates. In September 1983, 647 Persian ibex were counted during an aerial census of the Big and Little Florida Mountains.

2. Threatened or Endangered Fauna Species

There are no known threatened or endangered animal species in the Florida Mountains WSA. Since there is excellent cliff nesting habitat, the range was included in a peregrine falcon survey conducted by the New Mexico Department of Game and Fish in 1980. Both aerial and ground surveys were run. The report concluded that the Florida Mountains do not provide suitable habitat for peregrine falcons.

F. Visual

Two scenic quality rating units describe the Florida Mountains WSA. Most of the WSA, composed of the peaks and slopes of the mountains, has a Class A (high) rating. The higher elevations are characterized by

steep, angular rock outcroppings with jagged, vertical intrusions dominating the highest peaks. A variety of reds and grays are the predominant landform colors. The vegetation is diverse in random irregular patterns. Low shrubs and grasses are dominant at the lower elevations, with dark green juniper increasingly scattered in the higher elevations. Vegetation colors range from yellow to green.

The southern part of the WSA has a Class C, or low rating. This area is a flat to gently rolling alluvial plain. Coloration is typically light reddish brown. The vegetation is primarily grasses and low shrubs in muted greens and light browns. Unusually large barrel cacti are located in this part of the WSA.

Most of the WSA, approximately 18,336 acres, is within a Visual Resource Management (VRM) Class II area. Approximately 4,000 acres in the southern part of the WSA are in a VRM Class III.

G. Cultural

There are two known prehistoric sites in the Florida Mountains WSA. They consist of a series of bedrock mortars and a fair sized campsite. The campsite is somewhat unusual due to its large size. There has been virtually no survey in this area and none in the higher elevations. The most likely areas for locating undiscovered sites are along the major drainages leading out of the mountains.

Historic use of the WSA has been limited to ranching, which left few remains, and mining. It is not known if any significant structures remain from this period.

H. Air

Generally, the quality of air within the Florida Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of oil and gas or geothermal resources in the Florida Mountains WSA. The oil and gas potential within the Florida Mountains area is very low. High mountainous uplift, complex faulting, lack of favorable petroleum source rocks and reservoir rocks, and thin marine sedimentary strata are not favorable geologic conditions for petroleum accumulations.

There are no surface indicators or anomalies that would denote possible occurrences of geothermal resources.

Uranium and thorium minerals occur in the Precambrian granitic and gneissic rocks in various locales in the Florida Mountains. However, economic occurrences have not been found. These radioactive minerals are disseminated in various rock masses in relatively weak concentrations. Occurrences of the radioactive minerals uranium and thorium have not been found in sufficient quality or quantities to be considered significant.

Over half of the area (the Florida Mountains Raptor Nesting Area, approximately 12,338 acres) within the WSA is covered by a special stipulation for energy minerals leasing (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983). Surface disturbing activities would be allowed only during August 1 through January 31 on energy minerals leases within the Florida Mountains Raptor Nesting Area.

2. Non-Energy Minerals

Several types of saleable minerals occur in and around the Florida Mountains WSA. Building stone and marble are exposed in T. 26 S., R. 8 W., Section 4, northwest of South Peak just outside the WSA boundary. Limestone is exposed primarily in the southern half of the Florida Mountains, although some has been removed from a small area south of Capitol Dome in the northeast part of the WSA. The New Mexico State Highway Department has a right-of-way (NM-055609) for a material pit adjacent to the WSA boundary (in T. 26 S., R. 8 W., Section 21) where they operate a gravel pit with a portable crushing and sizing system.

Base and precious metals have been mined intermittently in the Florida Mountains since about 1880. The base metals are lead, zinc, and copper. The precious metals are gold and silver. All of these minerals, except gold, are on the National Defense Stockpile Inventory of Strategic and Critical Minerals. The period during which the most production occurred was from 1880 to 1920.

No mine production records were found in any of the available literature. The number of mine workings (approximately 50) from which there was some production indicates there must have been approximately \$500,000 in ore produced. Ore tonnage from these mines cannot be measured, but the value can be estimated by comparison with other mining locales of the same character where similar amounts of ore were excavated.

Manganese ore production in the Florida Mountains began in 1942 and continued intermittently until 1958. Approximately 60 percent of the output was sold to the Deming Purchasing Depot during a 5-year period from 1952 to 1957. The Depot was operated by the General Services Administration (GSA) to purchase manganese ore for the United States under the Strategic Minerals Purchasing Program. Records of manganese production sold elsewhere are not available.

There are two principal locales in the Florida Mountains where manganese occurs. These locales are the Birchfield area and the South Side manganese area.

The Birchfield area is along the east side of the WSA, north-northeast of Gym Peak in T. 25 S., R. 7 W., Section 31 and the W1/2 of Section 32. The manganese occurs as irregular replacement deposits in Paleozoic limestone beds. There are at least 15 occurrences in the Birchfield manganese-bearing locale. The area contains an unusual amount of manganese mineralization and is favorable for the occurrence of substantial amounts of ore. There are inferred resources of 15,000 to 25,000 tons of good manganese ore. There could be up to 100,000 tons of manganese ore remaining.

The South Side manganese area extends along the southern terminal margin of the Florida Mountains through T. 26 S., R. 7 W., Section 19, and T. 26 S., R. 8 W., Sections 16, 21, 22, 23, and 24. The mineralized footwall of a normal fault is exposed across the terminal end of the mountain for about 6 miles in an east-west direction. There is black manganese staining on much of the rock and thin manganese film occurs in many of the fractures and joints.

The hanging wall side of the fault is down-dropped and is buried under talus and alluvium. There has been no subsurface exploration in this down-dropped fault block to test for mineral potential. The only mineralogical information available is from the manganese ore that has been mined from the Pacheco (Wet King) and Big Pocket Mines. These two mines are in Box Canyon on the cherry-stemmed private surface/Federal subsurface mineral estate in the southern part of the WSA. About 800 tons of manganese ore were produced from these mines from 1952 to 1955.

The presence of rock alteration along major faults in the central and southern parts of the mountains are favorable indicators for ore deposits. Fault controlled, hydrothermally emplaced mineral deposits are exposed in existing mines and prospects. Anticipated mineral activities include prospecting, assessment work, exploration drilling, and core drilling.

The Florida Mountains have been mined and prospected sporadically during the past 100 years. Most of the discovered deposits were fairly small and would not be economic on today's market. Prospecting continues to be active in the Florida Mountains. The potential for base metals, precious metals, and manganese deposits is high.

BLM mining claim microfiche records (November 17, 1983) indicate that there are 55 mining claims located within the WSA or

overlapping the WSA boundary; 49 of these claims were located prior to the passage of the Federal Land Policy and Management Act (FLPMA) of 1976 and are referred to as "pre-FLPMA" claims. The remaining six claims are "post-FLPMA" claims.

In addition, 108 mining claims have been recently located for precious metals in the southeast part of the WSA by Luna Ores, Inc. The claims have been filed in the Luna County Courthouse, but have not yet shown up on the BLM microfiche records available in the Las Cruces District Office. The Luna Ores claims are located on the Federal surface/subsurface and the cherry-stemmed private surface/Federal subsurface mineral estate south of Gym Peak.

Underground exploration by adit development for base and precious metals is occurring on the group of pre-FLPMA unpatented mining claims in T. 26 S., R. 8 W., Section 1, SE1/4 (the Copper Ridge and Anniversary claims). The current mining activities were determined to be grandfathered activities because (a) they are the same types of activities as those occurring on this group of claims on October 21, 1976, (b) they will result in the same kinds of physical and aesthetic impacts, and (c) they represent a geographic extension of previous activities on this group of claims.

B. Watershed

Water use within the Florida Mountains WSA is primarily by livestock and wildlife. There is one well facility, two wildlife guzzlers, two umbrella catchments, and six spring developments within the WSA. In addition, there are two undeveloped springs in the WSA. (See Chapter III, Livestock Grazing and Wildlife.) There are no water control structures or land treatments within the WSA.

Erosion hazard ranges from severe on the steep, rocky type soils that have rapid runoff to moderate on the alluvial fans. There are no watershed projects proposed in BLM's land use planning system for this area.

C. Livestock Grazing

1. Allotments

Parts of six grazing allotments are within the Florida Mountains WSA. Livestock use in parts of the Florida Mountains is limited due to steep slopes. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Nathan Crawford 2007	5,532	444	960	17%
Neal Crawford (Baker) 2008	5,277	516	418	8%
Gerald Greeman 2025	8,142	1,983	6,174	76%
Leo Koenig 2033	24,857	2,436	5,612	23%
May, Inc. 2035-2539	9,255	1,752	5,580	6%
Delia Perez 2041	7,416	552	3,592	48%
TOTAL			22,336	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Gerald Greeman 2025	2 improved springs, trough interior fence	T. 25 S., R. 7 W., Sec. 31 2 miles
Leo Koenig 2033	windmill interior fence	T. 26 S., R. 7 W., Sec. 20 1 1/2 miles
May, Inc. 2035-2539	improved spring improved spring, trough, undeveloped spring 2 improved springs, troughs, undeveloped spring interior fence	T. 25 S., R. 8 W., Sec. 12 T. 25 S., R. 8 W., Sec. 14 T. 25 S., R. 8 W., Sec. 23 2 miles

Boundary Fences:

Crawford 2007 and Crawford 2008	1/4 mile
Crawford 2007 and Perez 2041	3/4 mile
Koenig 2033 and May 2035	1 3/4 miles
Greeman 2025 and Koenig 2033	1/2 mile
Greeman 2025 and May 2035	1/2 mile
Crawford 2008 and Koenig 2033	1/2 mile
Perez 2041 and Koenig 2033	3 miles
May 2035 and Crawford 2008	3/4 mile

Note: ^{a/}Information shown in tables reflects Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

A pipeline and trough off of the existing well in T. 26 S., R. 7 W., Section 20, is proposed on the Leo Koenig allotment (2033) (BLM Las

Cruces/Lordsburg MFP Amendment/EIS, 1983). Only about 1,000 feet of the proposed pipeline would be within the WSA since the well is just inside the southeast boundary of the WSA. The proposed pipeline would run due south from the well and the proposed trough would be located several miles outside the WSA boundary.

The location of this proposed rangeland development is tentative. The purpose of the pipeline and trough is not to accommodate increased livestock numbers, but to redistribute existing grazing use over the southern pasture of the Leo Koenig allotment (2033) and relieve grazing pressure around existing livestock waters.

D. Recreation

The Florida Mountains provide opportunities for hiking, climbing, and nature study. Hunting for quail, dove, and deer occurs in the area. Three limited permit Persian ibex hunts, trophy and nontrophy, are held in the Florida Mountains annually. Vehicle related recreation use occurs on the WSA boundary roads and the roads cherry-stemmed into the WSA.

The area is also visited by rockhounds. Rockhound State Park is 2 miles north of the WSA's northern boundary. In addition, Spring Canyon State Park (in T. 25 S., R. 8 W., Section 1) is adjacent to the north boundary of the WSA. Access into the Park was recently upgraded and plans for the Spring Canyon facility include more picnic tables, shelters, and the installation of electricity.

Visitor use information for the Florida Mountains WSA is unavailable.

The only BLM plan outlining specific management direction for recreation in the Florida Mountains is the Wildlife Habitat Management Plan (HMP). The HMP specifies that high intensity recreation sites should not be developed until after 1987. This recommendation is based on the opinion that high intensity use could be expected to increase ibex movements off the Florida Mountains into other habitats. After 1987, information will be available on ibex concentration areas and the potential for developed sites can be reevaluated.

E. Education/Research

A number of graduate students (Woodroof 1979; Sutcliffe 1972; Bavin 1975) from New Mexico State University and Colorado State University have conducted studies on the Persian ibex in the Florida Mountains. The area was included in the New Mexico Department of Game and Fish survey for peregrine falcon eyries in 1980.

Bill Isaacs, David C. Johnson, and J. S. Findley have conducted various plant surveys in the Florida Mountains. Corbitt and Woodward (1970) studied the thrust faults of the Florida Mountains and their regional tectonic significance.

F. Realty Actions

The New Mexico State Highway Department has a right-of-way (ROW) (NM-055609) for a material pit adjacent to the WSA boundary in T. 26 S., R. 8 W., Section 21, SE1/4 SW1/4, SW1/4 SE1/4. The Highway Department operates a gravel pit with a portable crushing and sizing system on the site.

The Columbus Electric Cooperative transmission line ROW (NM-016066) forms approximately 9 miles of the northwest, northeast, and southwest boundaries of the WSA.

On July 30, 1980, Barite of America was issued a 10-year ROW (NM-37536) for a 0.18 mile mine access road in T. 25 S., R. 7 W., Section 30, Lots 3 and 4, and T. 25 S., R. 8 W., Section 24, SE1/4 SE1/4.

The Industrial Communications and Equipment Company was issued a ROW in February 1984 for a solar-powered radio repeater site and the existing cherry-stemmed access road in T. 26 S., R. 8 W., Section 1, SW1/4 NW1/4. The 25-year ROW was issued with the stipulation that the ROW would be revoked and all improvements removed if the Florida Mountains were designated wilderness.

G. Wildlife

A HMP was completed for the Florida Mountains in 1979. The HMP is a joint plan between BLM and the New Mexico Department of Game and Fish (NMDGF). The objectives of the plan which apply to the WSA are:

1. to maintain or improve the condition of key forage species;
2. to protect vegetation and soil resources;
3. to improve distribution of reliable water sources for big game in the higher elevations;
4. by hunting and other control methods, to limit the ibex population to levels determined to be within the safe and proper carrying capacity of the habitat;
5. to continue additional studies of the ibex including annual census, population ecology, and distribution.

There are two quail guzzlers in the northwest part of the WSA in T. 25 S., R. 8 W., Section 3, SE1/4 and Section 23, SW1/4. Two umbrella catchments have been installed at high elevations in T. 25 S., R. 8 W., Section 24, SE1/4, and T. 26 S., R. 8 W., Section 10, NE1/4. These catchments complete planned water development for the ibex.

The fire section of the HMP specifies that wildfires should be allowed to burn above the 6,200 foot level. This recommendation was not carried forward in a fire plan. However, the Las Cruces District portion of the statewide fire plan is currently in preparation. The original recommendation from the HMP or a let-burn recommendation for the entire range will be carried forward in the statewide fire plan.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of the Florida Mountains WSA is affected by a variety of the imprints of man: wildlife waters, rangeland developments, vehicle trails and cherry-stemmed roads, and mining activity.

The two wildlife waters in the northwest part of the WSA are the guzzler type. They have a minimal impact on naturalness. The vehicle trails accessing the waters have a slightly greater impact on naturalness than the wildlife waters. There are two umbrella catchments, made of galvanized metal, within the WSA. They are located at high elevations north of Baldy Peak and north of South Peak. Access to these waters is on foot, by horseback, or by helicopter. They also have a minimal impact on naturalness.

Rangeland developments affecting the naturalness of the area include improved springs, fences, and cherry-stemmed well facilities. The 6 improved springs and approximately 13 1/2 miles of fence in the WSA do not greatly impact naturalness. White Dome Well, Blue Water Well, and Victorio Well are all cherry-stemmed developments along the east side of the Florida Mountains. The facilities at these wells include windmills, storage tanks, drinking troughs, corrals, and loading chutes. The Victorio Well is outfitted with a gasoline powered pumpjack. These developments and the associated access roads, although cherry-stemmed, impact naturalness locally, especially in the areas northeast, east, and southeast of Baldy Peak.

Mining activity and the associated access have had the greatest impacts on the naturalness of the Florida Mountains WSA, especially in the northeast and east-central portions of the WSA. The Stub Mine and Birchfield-Bradley mines are located in the northeast part of the WSA. The Stub Mine consists of two shafts and is accessed by a 1 1/2-mile-long jeep trail. The Birchfield-Bradley mine area and access road are cherry-stemmed. Two buildings, several junked vehicles, mine structures, two mine shafts, and prospect trenches, although within the cherry-stem, impact naturalness in this area.

Approximately 1 mile southwest of the Birchfield-Bradley mines are the Atir and Barite of America (BOA) mines. Several mine shafts, prospects, and the remains of old mine buildings are located in and around Lobo Draw. The access route up Lobo Draw is cherry-stemmed. The post-FLPMA BOA mine access road has the greatest impact on naturalness in this area; however, less than a mile (0.18 mile) of the road is on Federal land within the WSA. This portion of the road on Federal land is covered by a right-of-way and reclamation plan.

Mining impacts affect the quality of the apparent naturalness in the 3 square mile area north of Gym Peak. Several prospects

and a mine shaft are located less than 1/4 mile north of Byer Spring in T. 25 S., R. 7 W., Section 31. The Birchfield manganese mines (San Tex mines) are located in T. 26 S., R. 7 W., Section 6, NE1/4 and T. 25 S., R. 7 W., Section 31, SW1/4. The imprints of man in this area include approximately 20 prospects and open cuts, tailings piles, 2 inclined shafts, the remains of a headframe, and vehicle trails. The Mahoney mines in T. 26 S., R. 8 W., Section 1 are accessed by a cherry-stemmed road climbing the west side of the Florida Mountains from Mahoney Park. Although cherry-stemmed, tunnels, dumps, several vertical shafts, the remnants of loading facilities, and a stone cabin used by the miner impact the quality of naturalness in this area. Grandfathered mining activities are currently proceeding on the group of claims in this area (the Anniversary and Copper Ridge claims). About 600 feet of an existing vehicle trail was improved by clearing brush and light blasting, and an exploration adit is being driven. These activities impact the naturalness of the ridge running south from Baldy Peak and the upper reaches of Copper Kettle Canyon. The dump resulting from the new adit will be visible from parts of Victorio Canyon and Gym Peak.

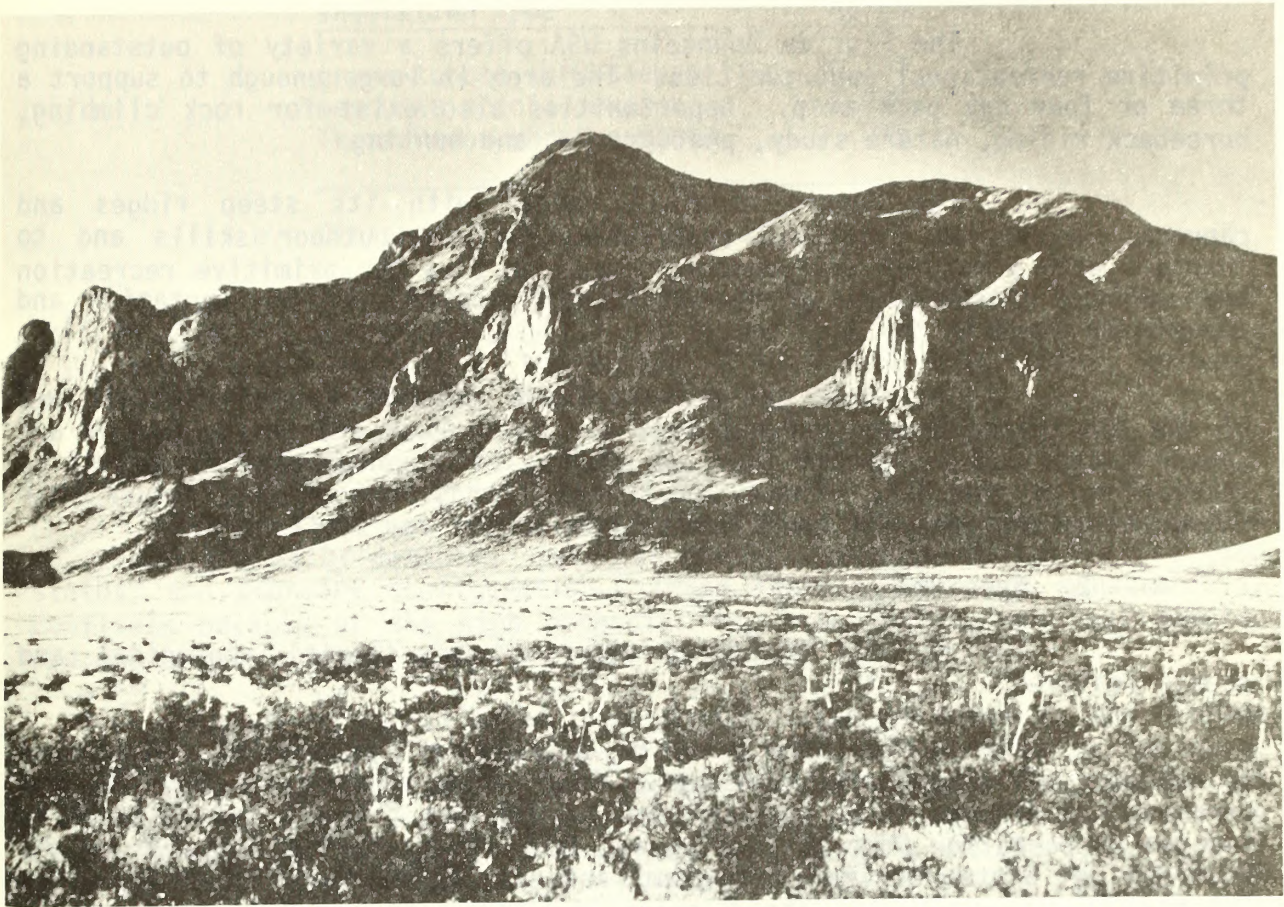
Approximately 1 mile south of the Mahoney mines in Copper Kettle Canyon is the Priser mine. Imprints of man around this mine include an old cabin, a steel storage tank, two adits, and five prospects. The Silver Cave patented mine is approximately 1/2 mile southeast of the Priser mine. In addition to the mine shaft located on the patented inholding, there are about 10 prospects on the unpatented claims in the area. The surface disturbance associated with these old mines affects the apparent naturalness of the lower southern slopes of Gym Peak and Middle Copper Kettle Canyon.

A windmill, storage tank, and corrals are located about 1/4 mile inside the WSA boundary in T. 26 S., R. 7 W., Section 20, NE1/4 NW1/4. These developments do not greatly affect apparent naturalness.

The southwest and southern parts of the WSA are the most natural. An area of approximately 3,000 acres in the rugged, mountainous southwest part of the WSA around South Peak is natural except for an umbrella catchment to the north-northwest of the Peak. Imprints affecting the alluvial fans and creosote flats 1 1/2 miles south of South Peak include: 3 1/2 miles of jeep trails, 4 miles of fence, the New Mexico State Highway Department's gravel pit (T. 26 S., R. 8 W., Section 21, SE1/4 SW1/4, SW1/4 SE1/4 which is adjacent to the WSA boundary), and the Columbus Electric Cooperative's transmission line, which forms the northwest, northeast, and southwest WSA boundaries.

The apparent naturalness of the northwest part of the WSA is impacted by three cherry-stemmed roads, two jeep trails, and evidence of past mining activity. Many of the mining impacts in this part of the WSA are on the cherry-stemmed Copper Queen and Capitol Dome patented mines. Mining imprints on the unpatented claims adjacent to Capitol Dome include six shafts, three adits, and several prospect pits.

Overall, the Florida Mountains WSA generally appears natural. The quality of naturalness in parts of the WSA, however, are diminished by the cumulative impacts of rangeland developments and mining activity.



Overview of the Florida Mountains.

b. Solitude

Portions of the Florida Mountains WSA provide outstanding opportunities for solitude. The large size of the WSA allows visitors to disperse and avoid the sights and sounds of others, and the rugged topography provides numerous secluded canyons and ridges. The highest quality opportunities for solitude are in the area around South Peak and in the north-central part of the WSA along the spine of the mountain. These areas are away from roads and other imprints of man.

The quality of opportunities for solitude along the east slopes of the Florida Mountains is somewhat diminished by cherry-stemmed roads, rangeland developments, and evidence of past mining activity.

Opportunities for solitude are less than outstanding in the creosote flats in the southern part of the WSA and in the area southwest of the Copper Queen patented mine due to the lack of topographic and vegetative screening.

c. Primitive and Unconfined Recreation

The Florida Mountains WSA offers a variety of outstanding primitive recreational opportunities. The area is large enough to support a three or four day pack trip. Opportunities also exist for rock climbing, horseback riding, nature study, photography, and hunting.

The rugged mountain range, with its steep ridges and canyons, offers an excellent opportunity to use outdoor skills and to interact with a natural environment. Opportunities for primitive recreation are enhanced by the size of the WSA and the diversity of vegetation and topography found in the WSA.

The state and private lands adjacent to the central part of the WSA in and around Mahoney Park and Baldy Peak and in Box Canyon and Copper Kettle Canyon detract from the quality of opportunities for primitive recreation in the WSA. These non-Federal lands disrupt the topographic integrity of the area and limit destination points for visitors.

2. Special Features

The Florida Mountains WSA contains special ecological and scenic features.

The ecological features consist of vegetation values of scientific and educational interest. The plant species in the WSA are numerous and diverse. The WSA provides habitat for a Bureau sensitive plant species proposed for Federal listing and four plant species selected by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation). The Florida Mountains have outstanding scenic features with a Class A (high) scenic quality rating (see Chapter II, Visual).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the area as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	20,731
mesquite acacia savanna	1,289
Trans-Pecos shrub savanna	316

b. Distance from Population Centers

The Florida Mountains WSA is approximately 2 1/2 hours driving time from El Paso, Texas; 1 1/2 hours from Las Cruces, New Mexico; 5 1/2 hours from Albuquerque, New Mexico; 4 1/2 hours from Tucson, Arizona; and 6 1/2 hours from Phoenix, Arizona.

B. Manageability

Several factors affect the potential of the Florida Mountains WSA to be managed as wilderness: patented mines, existing mining claims, land status, and boundary configuration. These factors represent manageability conflicts because of the high potential for base metals, precious metals, and manganese in the Florida Mountains.

Strategic and critical minerals are known to occur in the Florida Mountains and there has been production from mines in the area in the past. Future mineral activities in the Florida Mountains are both possible and unpredictable. The Copper Queen and Capitol Dome patented mines are cherry-stemmed out of the northwest part of the WSA, and the Silver Cave patented mine is an inholding of approximately 30 acres in the southeast part of the WSA. Mining activities at the patented mines could degrade wilderness values in the northwest or southeast parts of the WSA. Upgrading the existing jeep trail in T. 26 S., R. 7 W., Sections 7, 8, and 18, to provide better access to the Silver Cave mine inholding would also degrade wilderness values.

There are numerous mining claims within the Florida Mountains WSA. These claims affect the manageability of the WSA in two ways:

1. The FLPMA specifies that mining uses that existed on the date of approval of the Act may continue in the same manner and degree during the time that an area is under wilderness review. Such mining uses are grandfathered and may continue even if the uses would impair wilderness suitability.

Mining activities are currently proceeding in the same manner and degree under the grandfather clause on the Anniversary and Copper Ridge groups of claims in the Mahoney mines area. These claims in T. 26 S., R. 8 W. cover most of Section 1 and parts of Section 12.

In addition, mining claimants may be recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976, and the claimant can show BLM that the claim continues to be supported

by such a discovery. Valid existing rights convey a more liberal development standard than grandfathered rights in that activities on valid claims are not limited to the same manner and degree. When it is determined that the valid existing rights can be exercised only through activities that will impair wilderness suitability, the activities will be regulated only to prevent unnecessary and undue degradation.

If any of the pre-FLPMA claims in the Florida Mountains WSA which meet the above criteria for grandfathered activities or valid existing rights are developed, wilderness values could be degraded before the area is designated wilderness.

2. Once an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in an area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations, "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, wilderness values could continue to be degraded after the area is designated wilderness.

The land status in the Florida Mountains also affects the manageability of the area as wilderness. The land status in this mountain range is a mosaic of state, private, and public lands. As a result, the WSA boundary is very convoluted. For example, fairly large parcels of private land are cherry-stemmed in Copper Kettle and Box Canyons in the south and southeast parts of the WSA. The subsurface mineral estate on these particular parcels is in Federal ownership. Split-estate parcels of this kind are also located adjacent to the WSA boundary in and around Windmill Canyon and Lobo Draw (T. 25 S., R. 7 W., Sections 18 and 30, respectively) and Lovers' Leap Canyon and Mahoney Park (T. 25 S., R. 8 W., Sections 12 and 26, respectively). These split-estate parcels represent manageability problems because of the mineral potential of the WSA. The Federal Government has no regulatory authority for surface management of mining activities on private surface/Federal subsurface lands. Restrictions on surface disturbance and plans for reclamation would be totally dependent upon agreements reached between the private surface landowner and the mining claimant. Nonwilderness uses such as mining activity on these lands or the state land around Dragon Ridge and Baldy Peak (T. 25 S., R. 8 W., Sections 2 and 36 and T. 26 S., R. 8 W., Section 2, respectively) could degrade wilderness values in the WSA. The uncertain long-term management of these lands represents a major manageability problem.

Because of the Florida Mountains' high mineral potential, the numerous mining claims in the WSA, and the land status and boundary configuration of the WSA, management of the Florida Mountains to preserve existing wilderness values in the long-term would be complicated. However, the area could be managed as wilderness.

V. PUBLIC INVOLVEMENT OVERVIEW

Since the beginning of the BLM wilderness review, the determination of wilderness characteristics in the Florida Mountains has been especially difficult and controversial.

After completion of the initial inventory, the BLM proposed in the April 1979 Wilderness Review New Mexico Situation Summaries that the Florida Mountains be dropped from further wilderness inventory. This recommendation was based on the rationale that, "The effects of numerous intrusions, abandoned and operating mines, roads in major areas, and utility lines result in a lack of naturalness in the area and a lack of outstanding opportunities... ."

During the public review of the Situation Summaries, many people disagreed with the BLM's original recommendation. More public comments were received on the Florida Mountains unit than any other unit in the Las Cruces District. The New Mexico Wilderness Review Initial Inventory Decision (BLM 1979) reflected the public sentiment: "Because of the comments received, a reasonable doubt exists that all or portions of the area may contain wilderness characteristics and the area will be intensively inventoried to confirm public comment."

Numerous roads were identified during the intensive inventory that divided the original inventory unit into smaller roadless areas. Four of these roadless areas are greater than 5,000 acres and were evaluated for their wilderness characteristics. The BLM judged that three of these roadless areas (identified as subunit NM-030-034B) lacked outstanding opportunities for solitude or primitive recreation and, therefore, did not meet the criteria for a WSA. However, one of these areas (subunit NM-030-034A in the central, mountainous portion of the unit) appeared to have at least minimum wilderness characteristics and BLM proposed in the New Mexico Wilderness Study Area Proposals (BLM 1980) that an area of 18,904 acres be designated as a WSA. Due to the subjectivity of this decision, heavy emphasis was given to public comments prior to the formulation of a final decision.

During the ensuing public review period on the WSA Proposals, numerous public comments were received and the Florida Mountains unit again proved to be one of the more controversial areas. Many of the comments included photographs, road affidavits, and newspaper clippings. Forty-three personal letters supported WSA status for the Florida Mountains. Most of the personal letters favoring wilderness study supported the Florida Mountains primarily because of the area's supplemental values and outstanding opportunities for solitude and primitive recreation. Thirty-nine personal letters opposed WSA status primarily because of mining and grazing impacts on naturalness.

After a reevaluation of the Florida Mountains' wilderness characteristics based on public comments, additional field checks, and all inventory information, BLM released the entire Florida Mountains unit from further wilderness review in the New Mexico Wilderness Study Area Decisions (BLM 1980). This decision was based on BLM's judgment that, "...the wilderness quality of the unit is negated by mining activity and grazing

improvements. There are twenty-one known unpatented mining claims within the boundaries of the originally proposed WSA. Numerous prospect pits, tunnels, shafts, and mine dumps are associated with these claims. Range improvements within the originally proposed WSA or along its boundaries include windmills, troughs, pipelines, developed springs, corrals, fences, and dirt tanks. Additionally, the configuration of the area is very irregular due to a combination of corridor roads and land status." "...due to the cumulative effects of the impacts described above, the unit does not appear natural."

The BLM's decision to release the entire Florida Mountains unit (both subunits NM-030-034A and NM-030-034B) was subsequently protested by two parties. The State Director denied both protests and both parties appealed to the Interior Board of Land Appeals (IBLA). After reviewing the appeals, the IBLA ruled that "there is sufficient doubt as to the adequacy of BLM's assessment of the naturalness of subunit NM-030-034A and the record does not support BLM's conclusion, the BLM decision...must be set aside and the case remanded to BLM for reconsideration of the naturalness of that subunit. BLM's denial of (the) protest as to the remainder of the Florida Mountains unit is affirmed."

After reevaluation of the naturalness of subunit NM-030-034A as directed by the IBLA, BLM concluded that the area meets the minimum naturalness criterion for a WSA. The quality of the area's apparent naturalness is addressed in this report.

During the public comment period on the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984), 36 personal letters were received indicating support for wilderness designation of the Florida Mountains WSA. Fifteen personal letters opposing wilderness designation were submitted.

Fourteen of the personal letters favoring wilderness designation for the area listed no supporting reasons. Most of the other letters favoring wilderness designation cited the area's basic wilderness characteristics as supporting reasons. Two comments specifically addressed BLM's evaluation of the quality of the WSA's naturalness. One commentator felt that the topography of the Florida Mountains mitigates the effects of rangeland developments and mining activity. Another commentator stated that because of the subjective nature of such an evaluation, the quality of an area's naturalness should not be used as a major rationale for dropping an area. The quality of the Florida Mountains' naturalness was only one of three reasons why BLM recommended the area unsuitable for wilderness designation. Potential manageability problems and mineral resource conflicts weighed heavily in the decision. In addition, the BLM's Wilderness Study Policy; Policies, Criteria and Guidelines for Conducting Wilderness Studies on the Public Lands (BLM 1982) directs the BLM to consider the quality of a WSA's wilderness characteristics in evaluating suitability for wilderness designation.

Several comments addressed BLM's evaluation of the Florida Mountains WSA's manageability and suggested additional alternatives. One comment stated that even though there may be problems associated with management of the area as wilderness, the law does not require that an area be easy to

manage in order to qualify for wilderness. BLM evaluated the manageability of all areas under wilderness study as directed by the Wilderness Study Policy. Other comments suggested (1) eliminating the Mahoney Park/Byer Spring area and dividing the area into two WSAs of 7,000 acres in the northern part of the mountain range and 13,000 acres in the south or (2) including a partial wilderness alternative involving designation of the central core of the Florida Mountains as wilderness. Areas resulting from these alternatives would still have manageability problems due to mining claims, mineral potential, land status, and irregular boundary configuration. Two comments addressed the need for an Area of Critical Environmental Concern (ACEC) in the Florida Mountains. One commentator felt that ACEC management should have been considered because of "(1) The nationally significant scenic quality" and "(2) An immediate need to stop barrel cactus theft." Another comment suggested designation of the southwest barrel cactus area as an ACEC. BLM's rationale for not analyzing designation of an ACEC in the Florida Mountains for visual resources is included in Chapter 2, Alternatives Considered But Not Analyzed, of the Final Environmental Assessment (EA). An ACEC for the southwestern barrel cactus would not be appropriate because the area does not appear to meet the identification criteria as outlined in the Areas of Critical Environmental Concern Policy and Procedures Guidelines (June 1980).

Pro-wilderness comments on mineral resource conflicts generally reflected the attitudes that the Florida Mountains wilderness values outweigh mineral values and that the mineral potential is greatly exaggerated in the Draft Wilderness Analysis Report and EA. None of these comments included literature citations or geologic information to refute BLM's evaluation of the Florida Mountains mineral potential.

Supporting reasons listed by those opposing wilderness designation of the Florida Mountains WSA generally reiterated BLM's rationale for recommending the area unsuitable for wilderness designation.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 22,336 acres of public land within the Florida Mountains WSA would be recommended suitable for wilderness designation. (See Map 8 for location of the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, development work, extraction, and patenting of mining claims existing in the Florida Mountains WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. A Plan of Operations for mining on valid existing claims would include reclamation measures to provide for restoration as near as practicable of the surface of the land disturbed.

At the present time, there are numerous existing mining claims within the boundary of the WSA and, according to the Luna County records, on the cherry-stemmed private surface/Federal subsurface mineral estate in the southern and southeastern part of the WSA. Estimates as to the number or locations of claims that would prove to be valid are beyond the scope of this report, as are predictions of the impacts of mining activities on such claims. Therefore, only impacts of a general nature resulting from possible mining activities are identified.

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. The impacts to locatable mineral resources could also be significant under this alternative. The impacts on nonprimitive types of recreation, cultural resources, air, and education/research were clearly insignificant; therefore, they were not discussed.

1. Impacts to Minerals

There has been no energy minerals production within the WSA. Because the potential appears to be low, impacts to the energy minerals industry would be minor in the short-term. It is assumed that exploration and leasing for energy minerals would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential or for production and development. Although the energy minerals industry could be affected in the long-term, the impacts would not be significant.

Strategic and critical minerals are known to occur in and around the Florida Mountains WSA, and several mines in the northeast and southeast parts of the Florida Mountains are patented. There has been production in the past. Numerous unpatented claims are located within the WSA and a BLM Mineral Resource Inventory (1981) indicates high mineral potential. Valid claims located before wilderness designation could be developed to their full potential. However, during development, the mining companies could incur additional operating costs depending on restrictions on the type and location of access.

It is assumed that no new exploration, prospecting, or location of mining claims would be allowed after wilderness designation. Mineral trends could not be followed outside of the existing valid claim boundaries. Full development of the mining district could not take place under this alternative. Most of the minerals known to occur in the area are on the list of strategic and critical minerals. Wilderness designation could have significant impacts on locatable mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including threatened or endangered plant species (see Chapter II, Vegetation) in the WSA. Approximately 7 miles of vehicle trails would be closed which would allow reestablishment of vegetation in the long-term.

The proposed pipeline and trough off of the existing well in T. 26 S., R. 7 W., Section 20 on the Leo Koenig allotment (2033) (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983) could be installed if it were determined through site-specific analysis to be necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access along that portion of the pipeline within the designated wilderness (approximately 1,000 feet) would not be authorized. Burial of the pipeline would result in short-term impacts due to soil disturbance and removal of vegetation. Since the proposed trough would be several miles away from the boundary of the designated wilderness, the existing forage utilization patterns within the wilderness area could be affected. The proposed trough would provide a source of water in addition to the existing well in Section 20 which would be inside the designated wilderness boundary. The additional water source could relieve grazing pressure around the existing well and more evenly distribute existing livestock grazing use.

Other than the possibility of development of valid existing mining claims, no major surface disturbing activities are proposed in existing BLM plans. The added protection for water, soils, and vegetation as a result of wilderness designation would not be significant.

b. Wildlife

Wildlife and wildlife habitat in the Florida Mountains would continue to be managed under the Habitat Management Plan.

Restrictions on surface disturbing and mechanized activities and vehicular access would provide protection for wildlife habitat and reduce the potential for harassment of wildlife.

The vehicle trails that provide access to the two wildlife guzzlers in the northwest part of the WSA would be closed under this alternative. However, vehicular access for maintenance of the guzzlers or helicopter access for maintenance of the umbrella catchments could be authorized if there were no practical alternatives.

Other than the possibility of development of valid existing mining claims, there are no existing or proposed activities that would result in extensive surface disturbance. In addition, only 7 miles of vehicle trail would be closed to use under this alternative. The impacts on wildlife under this alternative would not be significant.

c. Visual

Existing visual resources would be protected. The area would be managed as a VRM Class I which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity. The quality of the existing visual resources would be maintained. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Motorized access on approximately 7 miles of vehicle trails within the designated wilderness would not be permitted. Checking livestock would be on foot or horseback.

The windmill on the Koenig allotment (2033) and two improved springs on the Greeman allotment (2025) would be the only rangeland developments in the area that would be denied their existing vehicular access through restriction on existing vehicle trails. Authorization for vehicular access or for the use of mechanized equipment to maintain these rangeland developments would be given only if there were no practical alternatives and would be on a permit basis.

The proposed pipeline and trough off of the existing well in T. 26 S., R. 7 W., Section 20 on the Leo Koenig allotment (2033) could be installed if it were determined through site-specific analysis to be necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access along approximately 1,000 feet of the pipeline within the designated wilderness would not be authorized.

The impacts to livestock operators would not be significant and would consist primarily of the minor inconveniences of securing permits.

e. Realty Actions

Under this alternative, the Industrial Communications and Equipment Company's right-of-way (ROW) for the solar-powered radio repeater

site and access road (in T. 26 S., R. 8 W., Section 1) would be revoked and the facilities would be removed.

f. Wilderness Values

Wilderness designation would provide the existing wilderness values in the area with long-term Congressional protection. However, the Florida Mountains WSA could not be managed to preserve existing wilderness values in the long-term. The outside sights and sounds of nonwilderness uses, such as mining activities on the non-Federal surface lands cherry-stemmed in the WSA and adjacent to the WSA, could degrade wilderness values. The exploration and development of valid mining claims in the WSA could result in significant impacts depending on the locations and extent of such activities and access requirements.

Under this alternative, the impacts on wilderness values could be significant.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 22,336 acres of public land in the Florida Mountains WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Over the long-term, the WSA could be fully explored and prospected and additional mining claims could be located and developed. Estimates as to the numbers of new claims that would be located or predictions of the impacts of development are beyond the scope of this report.

Under the No Action/No Wilderness Alternative, wilderness values could be significantly impacted in the long-term. The impacts to air and education/research were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

The wilderness values in the Florida Mountains WSA would not be provided with long-term Congressional protection. Management of the area as proposed in existing BLM land use plans would be subject to administrative change in the long-term.

The impacts of mining operations for locatable minerals on wilderness values within the area could be minimal to major depending on the extent and locations of the activities. Mining activities would be regulated to prevent unnecessary and undue degradation and reclamation, where reasonably practicable, would be required. However, the impacts of mining development and construction of required vehicular access could cause significant degradation of natural values and opportunities for solitude and primitive recreation. Construction of additional access could also partition the WSA into roadless areas less than 5,000 acres.

Unrestricted vehicular use on the existing trails and cherry-stemmed roads in the WSA by recreationists, grazing permittees, and miners would disrupt solitude in the vicinity of these trails and roads.

Under this alternative, the impacts to wilderness values could be significant in the long-term because protective management of the area would not be ensured through Congressional designation.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There could be a loss of vegetation and topsoil and a small increase in sediment load if mining claim development and construction of new access occurs. However, since mining activities would be regulated to prevent unnecessary and undue degradation, measures would be required to control erosion and water runoff, and reshaping and revegetation of disturbed areas would be undertaken where reasonably practicable.

The proposed pipeline and trough on the Leo Koenig allotment (2033) (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983) could be implemented without the constraints of the WMP. Burial of the pipeline and motorized access along the pipeline would result in soil disturbance and removal of vegetation along the 1,000 feet of pipeline within the WSA. This would be a permanent impact if a road is established along the pipeline. The total disturbance within the WSA would be less than one acre.

The cumulative impacts to water, soils, and vegetation under this alternative would not be significant.

b. Wildlife

If mining activities for locatable minerals are initiated, a certain amount of wildlife habitat could be destroyed and there would be direct disturbance to animals in the mining regions because of the added activity. Although such activity could affect nesting raptors and the Persian ibex, the impacts would not be significant.

c. Visual

Most of the area (18,336 acres) would be managed as a VRM Class II. In this VRM class, changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. If development of mining claims occurs, the existing visual resources could be degraded. However, the overall impacts on visual resources would not be significant since many of the mining facilities and access routes could be located so that they are effectively screened by the topography and vegetation and, where possible, comply with the VRM Class II guidelines.

Approximately 4,000 acres in the southern part of the WSA would be managed as a VRM Class III. In this VRM class, moderate changes in the landscape would be allowed as long as the visual contrast is subordinate to the existing landscape. Since most surface disturbing activities could

be mitigated to comply with the restrictions of a VRM Class III, the impacts to visual resources in this part of the WSA would not be significant.

d. Cultural

Although unrestricted access could accelerate the current rate of vandalism to cultural sites, the overall impacts to cultural resources under this alternative would not be significant.

e. Minerals

There would be no impacts on locatable minerals exploration and development. Such activities would be regulated under the Surface Management Regulations (43 CFR 3809) to prevent unnecessary and undue degradation to the land. There would be no economic benefits forgone under this alternative.

f. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. The proposed pipeline and trough on the Leo Koenig allotment (2033) (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983) could be implemented without consideration of the constraints of the WMP. There would be no impacts to livestock grazing.

g. Recreation

Although mining operations for locatable minerals could require the upgrading of existing access or the construction of new access, and the improved access could result in an increase in vehicle related recreation, the impacts would not be significant.

h. Realty Actions

Under this alternative, the Industrial Communications and Equipment Company's ROW for a radio repeater and access could be renewed at the discretion of the Las Cruces/Lordsburg Resource Area Manager.

APPENDIX I

GILA LOWER BOX WSA (NM-030-023)

I. GENERAL DESCRIPTION

A. Location

The Gila Lower Box Wilderness Study Area (WSA) is located 23 miles northwest of Lordsburg, New Mexico and 4 miles southeast of Virden, New Mexico.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Canador Peak, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The Gila Lower Box WSA is characterized by a semiarid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is slightly greater than 12 inches. A wide variation in annual totals is characteristic of southern desert climates. More than half of the precipitation normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration. The winter precipitation is mainly from gentle-intensity frontal type storms that may produce some light snow; however, the snow seldom accumulates on the ground.

During the summer months, daytime temperatures may exceed 100°F. The average monthly maximum temperature during July, the warmest month, is in the middle 90's. In January, the coldest month, the average monthly minimum temperature is in the low 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

The WSA contains a portion of the Gila River and the Lower Box Canyon. This portion of the river displays many characteristics of a youthful stream. The most prominent characteristics are the steep canyon walls, numerous short canyons extending themselves by head cutting and developing valley systems, a general lack of floodplain development, and canyon sides which rise abruptly from near the river's edge.

Structural benches and erosional columns, or hoodoos, occur in various places along the river. The southern portion of the WSA contains gently rolling hills and the drainages into the Gila River.

C. Land Status

The WSA contains 8,555 acres of public land and 120 acres of private inholdings. The following lands are private inholdings within the WSA:

- 40 acres - T. 19 S., R. 20 W., Section 21: SE1/4 SE1/4
- 80 acres - T. 19 S., R. 20 W., Section 28: W1/2 NE1/4

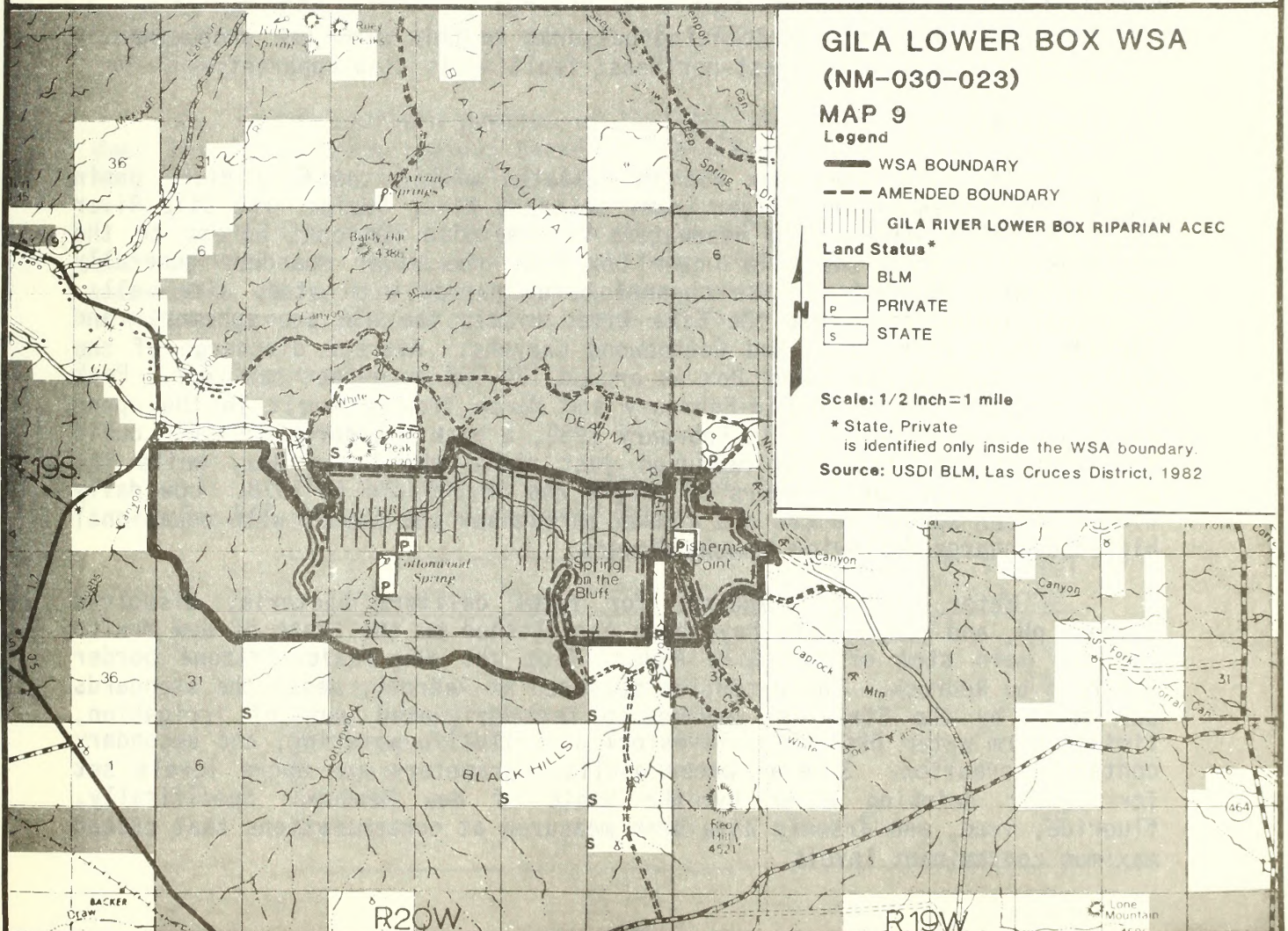
(See Map 9 for land status within the WSA boundary.)

D. Access

Legal access to the WSA is available from the south by county roads to Fisherman's Point and Spring on the Bluff (see Map 9 for general locations of these areas). Further physical access is available by ranch and mine roads that run east from State Highway 82 and roughly parallel the WSA's northern boundary.



Aerial view of the Gila Lower Box WSA.



II. EXISTING RESOURCES

A. Geology

There is no record of the geologic events occurring in this area prior to late Cretaceous times. The sequence of events during the Paleozoic and Mesozoic eras can be inferred from those of nearby areas (Gillerman 1964).

The late Cretaceous and early Tertiary periods were dominated by faulting and extensive andesite-rhyolite-basalt flows. River and shallow lake deposition of conglomerates and pediment gravels, apparently derived from highlands to the northeast, characterized the Quaternary period.

The oldest rocks exposed in the Gila Lower Box WSA are early Tertiary andesites consisting of andesite flows, flow-breccias, and localized andesite tuffs. Overlying the Tertiary andesites are the rhyolitic and latitic tuffs of the Datil formation. These are interbedded with some tuffaceous sandstone and conglomerates. The cliffs of the Gila Lower Box are formed from Datil formation tuffs and the older andesites. Younger basaltic andesites and volcanic conglomerates are exposed in the southeastern part of the WSA. Quaternary sediments include the Gila formation, pediment and terrace gravels, and stream terrace gravels.

The faulting and jointing patterns in this area are predominantly northwest trending. Some east-northeast faulting is also apparent.

B. Water

The Gila Lower Box WSA is situated within the Gila River Basin which contributes to the larger Lower Colorado River Basin. The Gila River is a perennial stream with headwaters in the Gila National Forest to the northwest. Through the Gila Lower Box WSA, the river meanders generally westward with portions of the channel being narrow with steep side walls. Principal tributaries into the Gila River within the WSA are ephemeral and include White Rock, Box, and Cottonwood Canyons. Average discharge of the Gila River through the Lower Box is around 134,000 acre-feet per year. Peak flows generally occur in mid-February and March from snowmelt in the upper reaches of the watershed. In February 1980, a peak discharge of 4,020 cubic feet per second (cfs) was measured just above the Lower Box, while the maximum discharge for 53 years of record was 58,700 cfs in 1978. Low daily flows between 20 and 40 cfs are common throughout the summer with occasional higher discharge following thundershowers.

Water quality standards for fecal coliform bacteria, dissolved oxygen, pH, and temperature have been established by the State of New Mexico for the main stem of the Gila River, from the New Mexico-Arizona border upstream to Redrock. The water, as measured at Redrock, meets the standards set forth by the State of New Mexico for designated uses of irrigation, limited warm water fisheries, livestock and wildlife watering, and secondary contact recreation. Several water quality parameters are above levels set for public drinking water by the State of New Mexico. Specifically, fluoride, iron, and arsenic have been measured at concentrations that exceed maximum contaminant levels.

Ground water is available in the alluvium and terrace gravels, and in the Gila Conglomerate, with lower yields expected in the volcanic rocks and interbedded bolson fill. Ground water movement is towards the Gila River and westward down the river valley. An ephemeral stream system contributes significantly to underground flow and recharge. Natural recharge occurs mainly as infiltration in the porous beds of streams and arroyos during periods of flood runoff. Water from alluvium and terrace gravels generally contains less mineral substances than water in adjacent rock formations. Ground water quality in the area is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Four different landforms, each with a different soil type, are found in the Gila Lower Box WSA.

In the bottom of the Gila Valley, the soils were deposited by the river and consist of stratified sands, silts, clays, and gravels. Surface textures range from silty clay loam to very gravelly sandy loam.

On the steep upland breaks into the Gila River, the soils formed in stratified old valley fill and commonly have a surface texture of very gravelly sandy loam. These soils have a high erosion hazard and contribute sediment to the river during periods of intense rain, which are common in the summer months.

In the southern portion of the WSA, on upland areas, the soils are deep and formed from igneous parent materials. Surface textures range from very gravelly loams to gravelly clay loams.

On the hills to the north of the Gila River, the soils are rocky and shallow and formed primarily from rhyolitic and basaltic parent materials. These soils typically have a surface texture of stony loam and are interspersed between numerous areas of rock outcropping.

D. Vegetation

1. General

The vegetation and associated range sites within the Gila Lower Box WSA consist of seven major types:

Vegetation Type	Range Site	Federal Acres
Grass	Hills	2,138
Creosote	Breaks	3,167
Mixed desert shrub	Loamy	2,583
Deciduous trees	River bottomland	454
Creosote	Gravelly	80
Creosote	Sandy	48
Creosote	Malpais (lava flow)	85

Grass species consisting of gramas, tobosa, bush muhly, threeawns, foxtail, and dropseeds are the dominant vegetation on the hills on both sides of the Gila River. A few scattered juniper trees are present along with the shrub species creosote, mesquite, and snakeweed.

Breaks, a highly erodable range site, occurs mainly along the south edge of the Gila River. Creosote is the dominant vegetation on the breaks. Other associated shrub species are snakeweed, mesquite, rabbitbrush, Mormon tea, yucca, mimosa, cacti, and a few scattered juniper trees. Grass species include bush muhly, black grama, tobosa, burro grass, fluffgrass, other gramas, and dropseeds.

Mixed desert shrubs are the dominant vegetation on the deeper loamy soils on the south side of the Gila River. Shrub vegetation is comprised of snakeweed, mesquite, cacti, yucca, mimosa, and creosote. Associated grass species are tobosa, threeawns, bush muhly, dropseeds, and black grama.

In contrast to the surrounding desert, the Gila River is the unique and dominant feature of this WSA because of important riparian vegetation. Vegetation, varied and diverse, is comprised of the deciduous cottonwoods, Arizona sycamores, Arizona walnuts, and willow trees. Grass species include bahia grass, Johnson grass, and Bermuda grass. Many different forbs and grasslikes occur in the bottomland. The river bottomland, though very productive, is in a very depleted state due to eroding soils and lack of vegetative cover.

Creosote is the dominant vegetation on gravelly, sandy, and malpais (lava rock) areas. Other associated shrub species are snakeweed, mesquite, yucca, and cacti. Grass species include tobosa, bush muhly, threeawns, gramas, cane bluestem, Arizona cottontop, and foxtail. Most of the grass species occur in the lava flow on the north side of the river.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

1. General

The Gila Lower Box WSA is extremely important for wildlife because it encompasses 587 acres of riparian habitat which supports the most diverse wildlife community of any habitat site. The upland portions of the area are creosote or snakeweed. Although these two sites do not support a rich fauna by themselves, the combination of the different sites is valuable. Those animals which normally use the upland areas have a source of water with the river close by. Some wildlife associated with the river would use the upland areas for feeding. Raptors, in particular, nest and roost along the river, but hunt in the creosote and snakeweed sites where mammalian and reptilian prey densities are high (USDI, BLM 1979, 1981).

The Gila River is extremely valuable for wildlife because it extends through the Chihuahuan Desert into the Sonoran Desert in Arizona (and into Mexico via the Colorado River). To the north, it reaches the Mogollon Plateau. This makes the river a natural pathway for a great number of species. As a result, almost half the vertebrate species which occur in New Mexico can be found along the lower Gila River. Most of these species also are found in the WSA.

The Gila River Valley, including the WSA, is particularly well-known for its abundance and diversity of bird life. The breeding riparian avifauna of the Gila Valley is the richest of any in the lower Colorado drainage (Johnson, et al 1974) and probably of any in the southwest. In addition, breeding densities of riparian birds appear to be comparable to those of the Verde Valley of Arizona, which are among the highest for any area in temperate North America. The Gila Valley also represents a highly significant breeding area for raptors (Johnson, et al op. cit.) and for peripheral species (Hubbard 1971).

In the lower Gila Valley, between Arizona and the Gila National Forest, 265 species of birds have been recorded. Of these, 144 were recorded in the summer. As many as 116 may breed there (Hubbard 1977). Most of these species can be found in the WSA. Of some interest is the fact that many birds reach a geographic limit at this section of the Gila River. Hubbard lists eight birds which are at their northern limits, five at their southern, and a number of others which are Sonoran or Mexican species.

Similar geographic distributions are exhibited with other wildlife. Sixty-seven mammal species can be found in or near the lower Gila Valley in New Mexico. About one-fourth of these are near their distributional limits; half of these are at their northern and half at their southern extensions. Twelve amphibians and 54 reptiles are found in or near this part of the river valley. About one-third of the amphibians and one-half the reptiles are at their distributional limits, and most of these are at their northern extensions. Again, most of these species can be found in the WSA (Hubbard 1977).

Some big game use the area. Mule deer numbers are low, but they are found in the WSA. Javelina populations are healthy. This species, too, is near its northern limits in the Gila River Valley.

2. Threatened or Endangered Fauna Species

The WSA has significant threatened or endangered species habitat. The peregrine falcon and the bald eagle, both Federally-endangered species, use the area but are not known to breed there.

Eight state-endangered species are found in this part of the river valley. The gray hawk is associated with riparian habitats. It is quite rare in New Mexico. Black hawks are also tied closely to riparian habitat. Two species which nest in the WSA are the Gila woodpecker and Bell's vireo. Gila monsters and narrow-headed garter snakes, two reptile species, have been seen in the WSA. There are two fish species, the spikedace and the loachminnow, which live in the shallower waters that are found in many parts of the WSA. These two species are also candidates for Federal listing.

The zone-tailed hawk has been identified as a special concern element by the New Mexico State Heritage Program because it reaches the northern limits of its distribution peripherally in New Mexico. This hawk nests in the WSA.

F. Visual

The Gila Lower Box is composed of massive blocky outcrops which break into the steep walled canyon. The canyon is over 600 feet deep in places. In the eastern half of the canyon, the predominant colors are pinks and reds. The western half is composed of a much darker black/brown rock. Water in the river is usually slow moving and flat. Water color varies with the season, but is generally brown. Vegetation in the canyon is dense near the river. This vegetation includes all ages of trees, bushes, and numerous grass and cactus plants. Flowers can provide a striking visual contrast during the spring. The Gila Lower Box Canyon has a class A (high) scenic quality rating.

The land south of the canyon consists of rounded rolling hills with arroyos and canyons cutting toward the river. Vegetation is predominantly short bushes and isolated patches of grass and cacti. This part of the WSA has a Class B (moderate) scenic quality rating.

The WSA is in a Visual Resource Management (VRM) Class II.

G. Cultural

The Gila Lower Box WSA contains several large petroglyph panels in the Mogollon style. While not as large as other petroglyph sites, they do contain significant information regarding the art styles and beliefs of the individuals who made them. A number of small rock shelters and rock structures are present throughout the WSA. They contain evidence of occupation and at least one granary. Low rock walls and mortar holes are associated with the rock shelters. The rock structures are significant in that such remains are very rare in this portion of the southwest.

Site density should be high in the north part of the WSA along the south facing slopes of the Rimrock. There is a high probability that any major cave or rock shelter has a site.

H. Air

Generally, the quality of air within the Gila Lower Box WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Gila Lower Box WSA. The Gila Lower Box has been classified by the Minerals Management Service as being prospectively valuable for oil and gas. However, potential is low due to the lack of petroleum source rocks and other geologic indicators (BLM Mineral Resource Inventory 1981).

Two areas within the Gila Lower Box WSA are covered by special stipulations for energy minerals leasing (Las Cruces/Lordsburg MFP Amendment/EIS 1983). (This document addressed energy minerals leasing, livestock grazing, and Areas of Critical Environmental Concern [ACEC].) The Gila River Lower Box Riparian ACEC is within the WSA. A No Surface Occupancy (NSO) stipulation would be attached to any energy minerals leases let within the ACEC. The boundary of the NSO area is drawn on legal subdivisions. Therefore, the NSO area is slightly larger than the ACEC. The NSO area encompasses 2,631 acres. In addition, approximately 1,890 acres of the Gila River Riparian Areas are within the WSA and outside of the ACEC. Riparian areas along the Gila River are covered by a protective stipulation for threatened or endangered species habitat.

2. Non-Energy Minerals

There are currently 2 unpatented mining claims recorded within the WSA. Both of these claims were located after the passage of the Federal Land Policy and Management Act on October 21, 1976, and are referred to as "post-FLPMA" claims. Several 10 foot deep prospect pits have been dug on these two unpatented mining claims in T. 19 S., R. 20 W., Sections 23 and 26. Mineral specimens of banded calcite, locally known as onyx, and some geodes occur in basaltic andesites. Although deposits of banded calcite and travertine are known to grade into manganese deposits locally, no evidence of manganese mineralization was observed at this location. Manganese deposits are present at the following mines outside the WSA: the Black Bob Mine, approximately 1/2-mile north; Consolation Mine, 1/4-mile east; and the Caprock Mountain Mines, 1 1/2 miles southeast. The deposits may indicate a mineral trend which could extend into the WSA. At the present time, the potential for occurrences of manganese appears to be low to moderate. Manganese is on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company during the public review of the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (1983) rated the area as having high intermediate potential for gold, manganese, silver, and zeolites. This rating indicates that a number of geologic characteristics are present that suggest the occurrence of these minerals.

As noted above, the Gila River Lower Box Riparian ACEC is totally within the WSA. The special management requirements for the ACEC

include segregation from the mining and material sale laws. The segregation has not yet been implemented. The boundary of the area to be segregated is drawn on legal subdivisions and is, therefore, slightly larger than the 2,469-acre ACEC. The segregated area would encompass 2,631 acres.

B. Watershed

Within the Gila Lower Box WSA, water use is primarily by livestock and wildlife, limited warm water fishery, and secondary contact recreation. There are currently no water developments within the WSA; however, one development is proposed for livestock use (see Chapter III, Livestock Grazing).

The Gila Lower Box is within the Gila-San Francisco declared underground water basin and ground water use is administered by the New Mexico State Engineer. In the Gila-San Francisco underground water basin, all existing water rights have been adjudicated and there is presently no additional water available for appropriation for any purpose.

Water draining the Gila Lower Box WSA, as both surface flow and underground flow, contributes to the Gila River system. This water is important for sustaining riparian vegetation along the river and additional downstream uses including irrigation and limited drinking water.

A watershed decision in the Gila MFP (BLM 1977) identifies areas where water control structures to reduce flood and sediment damages should be considered. A portion of this area lies within the Gila Lower Box WSA.

Two of the management objectives for the Gila River Lower Box Riparian ACEC relate to watershed. They are (1) to maintain and improve channel stability of the Gila River and (2) to manage the public land to maintain and improve water quality to meet State standards for fecal coliform count, dissolved oxygen, pH, and temperature. The ACEC is discussed in detail in Chapter III, Wildlife, of this report.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Gila Lower Box WSA. Licensed grazing use on the public land includes cattle and a few horses. The Lazy B Cattle Company allotment (5058) is administered out of the BLM Safford District in Arizona.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
J. R. and C. Donaldson 1016	2,400	288	1,989	83%
R. Johns 1076	1,650	288	423	26%
Caprock 1078	30,028	4,884	5,234	17%
Lazy B Cattle Co. 5058	109,070	24,905	909	1%
TOTAL			8,555	

Note: a/Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

2. Ranch Management

Boundary Fences:

Caprock 1078 and Lazy B Cattle Co. 5058	1 1/4 miles
Donaldson 1016 and Lazy B Cattle Co. 5058	1 1/4 miles
Donaldson 1016 and Johns 1076	2 1/4 miles

3. Potential Rangeland Developments

There is one dirt tank proposed on the Donaldson allotment (1016) in T. 19 S., R. 20 W., Section 28 (Las Cruces/Lordsburg MFP Amendment/EIS, 1984). The location of this rangeland development is tentative. The purpose of the proposed dirt tank is not to accommodate increased livestock numbers, but to redistribute grazing use over the Donaldson allotment (1016) and relieve grazing pressure around existing livestock waters. The rangeland condition on presently heavily grazed areas of the allotment could show improvement in the long-term.

The entire 6 mile stretch of the Gila River within the Gila Lower Box WSA flows through the Caprock Mountain allotment (1078). Approximately 17 percent of the allotment is within the WSA, 17 percent is north of the WSA, and the remaining 66 percent of the allotment is south of the WSA. A Range Improvement Justification Plan (RIJP) (BLM 1984) outlining overall management objectives and needed rangeland developments has been prepared for the Caprock Mountain allotment. The RIJP includes plans to divide the allotment, through fencing, into more evenly sized pastures and to create livestock waters in the southwest, south-central, east-central, central, and northern parts of the allotment where livestock waters are inadequate. The fencing and additional waters would keep livestock out of the bottom of the Gila River Canyon where they congregate for extended periods because of the availability of water and shade. Overall, these facilities would provide for more even utilization of forage over the entire allotment and facilitate more efficient livestock management. Proposed developments in or near the WSA include a pipeline and trough along the cherry-stemmed road to Spring on the Bluff (see Map 9) in T. 19 S., R. 20 W., Sections 26 and 35, and fencing along the north and south rims of the river canyon. The proposed fencing could consist of fences along the entire length of the rims or fences across only those drainages where livestock have access down to the river. A water gap would be required across the river in the area south of Canador Peak. The water gap would allow livestock access to the river for watering, but would prevent access into the canyon. The livestock would be forced to travel back up onto the river breaks and uplands to feed. Access to the Gila River for livestock watering is necessary because the permittee has water rights on the river that serve as a base water for his operation. Control of base waters is required for grazing privileges on public land. Since the Gila-San Francisco is a declared underground water basin and all existing water rights have been adjudicated, there are presently no additional water rights available for appropriation and the permittee cannot transfer his base water to another source at the present time.

D. Recreation

This area provides a variety of primitive recreation opportunities based on the Gila River and the Lower Box Canyon. A discussion of these opportunities is located in Chapter IV, Primitive and Unconfined Recreation.

The special management objectives of the Gila Lower Box Riparian ACEC, as they relate to recreation, include the maintenance of recreation resources by preserving scenic values and preserving primitive recreation opportunities. The ACEC is discussed in detail in Chapter III, Wildlife, of this report.

E. Realty Actions

A portion of the Gila Lower Box WSA⁰ is withdrawn for use in connection with the San Carlos Indian Irrigation Project. The purpose of the withdrawal is watershed protection.

In addition, segments of the WSA are withdrawn for powersite reservations by Executive Order. These lands are currently being reviewed by the U.S. Geological Survey, Water Resources Division, to determine their importance for powersite locations. Those withdrawals found not feasible for power sites will be revoked.

The U.S. Geological Survey, Water Resources Division, was granted a temporary right-of-way for a new gauging station on the Gila River just inside the northeast boundary of the WSA. The right-of-way and gauging station conform with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979). The base data collected at the gauging station consist of measurement of stream discharge and is part of a network of surface water gauging stations on the Gila River Basin. The data are important for many hydrologic investigations, including flood flow frequency analysis.

F. Wildlife

There are no existing wildlife developments in the Gila Lower Box WSA, but several potential uses exist. The New Mexico Department of Game and Fish wants to look at the area intensively to determine the full potential for desert bighorn sheep. If it is suitable habitat, bighorn sheep could be transplanted in the future (Sandoval 1982).

The Gila MFP (BLM 1977) contains a number of decisions related to wildlife. These include BLM sponsorship of research for endangered species and javelina in the Gila River Valley, and preparation of a Habitat Management Plan (HMP) with emphasis on riparian vegetation and the wildlife dependent on it. The HMP is scheduled to be written in 1985. BLM has not yet sponsored research in the area.

An area of 2,469 acres totally within the Gila Lower Box WSA was proposed as the Gila River Lower Box Riparian Area of Critical Environmental Concern (ACEC) and the impacts of designating the area analyzed in the Draft Las Cruces/Lordsburg MFP Amendment/EIS (BLM 1983) for energy minerals leasing, rangeland management, and ACECs. Approval of the plan in early

1984 constituted formal designation of the ACEC with the provision that if the Gila Lower Box WSA is designated wilderness by Congress, the ACEC designation would be cancelled without further planning action and the management objectives of the ACEC would be met through wilderness management.

The resources of the Gila Lower Box meet the two criteria required for an area to be identified as an ACEC: (1) The resources are "relevant" in that they include resources specifically listed in the definition of an ACEC in Section 103(a) of the Federal Land Policy and Management Act. The important resources in the Lower Box are cultural and scenic values, fish and wildlife resources, and important natural systems or processes. (2) The resources are "important" because they have more than local significance.

The ACEC contains 6 miles of river valley with a temperate riparian deciduous forest vegetation type. Typical plant species are cottonwood, willow, and sycamore with an understory of shrubs such as mesquite, seepwillow, and various grasses and forbs. The thickest vegetation is in clumps near the river bottom. The vegetative community is in a dynamic state because of fluctuations in the water level. It has adapted to this, and the maintenance of the riparian vegetation depends on periodic flooding.

Riparian areas serve important hydrologic functions that are especially important in the arid Southwest. A good growth of riparian vegetation helps stabilize channel erosion. Riparian areas also serve as ground water recharge areas.

The Gila River and its major tributary, the San Francisco River, together with the tributaries of both, is the most important river system in New Mexico from a biological point of view. Zeller (1981) stated that the Gila System, in its present state in New Mexico, ranks high in comparison to any other systems in the southwestern United States.

The Gila River System extends into the Mogollon Plateau to the north, into the Chihuahuan Desert in western New Mexico, and through the Sonoran Desert in Arizona. There is also a great deal of influence from Mexico. As a result, a diverse wildlife community is found in the river valley. Although the ACEC is less than 1 percent of the Las Cruces/Lordsburg Resource Area, as many as half the wildlife species which occur in the state could be found in the ACEC.

The Heritage Conservation and Recreation Service prepared a Nationwide Rivers Inventory (National Park Service 1982) of rivers that might be eligible for wild, scenic, or recreational river status as outlined in the Wild and Scenic Rivers Act (P.L. 90-542, October 2, 1968). A 97-mile length of the Gila River extending from the Arizona-New Mexico border to the confluence of the East and West Forks within the Gila National Forest was identified in the Nationwide Inventory. This part of the Gila River is also included in the proposed New Mexico Rivers System. The Gila Lower Box ACEC is located in this segment of the Gila River.

In addition, the ACEC contains important scenic and cultural values. These values are described in Chapter II, Visual, and Chapter II, Cultural, respectively. As a result of the resources and values described

above, the area provides primitive recreation opportunities unique to the region. Primitive recreation opportunities are discussed in Chapter IV, Evaluation of Wilderness Values.

The management objectives of the Gila River Lower Box Riparian ACEC are:

1. to protect and improve riparian vegetation which provides habitat for nine Federal or state-listed endangered species, an avifauna which is one of the most diverse in the southwest, equally diverse mammalian and reptilian communities which represent half the known mammals and reptiles in the state, and a warm water fisheries resource consisting of both native and non-native fishes;
2. to maintain and improve water quality at least to meet state standards for fecal coliform count, dissolved oxygen, pH, and temperature;
3. to maintain and improve channel stability;
4. to maintain the recreation and cultural resources by protecting and interpreting the petroglyph panels and rock shelters present in the area, preserving the scenic values, and preserving primitive recreation opportunities;
5. to allow livestock grazing to the extent that it is compatible with the other objectives.

The special management requirements of the ACEC include fencing small selected plots to protect riparian vegetation and restricting livestock use on the plots to allow reestablishment of bottomland species and improvement of ground cover. Six plots of approximately 5 acres each are scheduled to be fenced in the summer of 1984. The fencing meets the nonimpairment criteria outlined in the Interim Management Policy and Guidelines for Lands Under Wilderness Review (1979). When a good growth of riparian vegetation within these plots has been achieved, the fencing will be removed and additional plots fenced. However, if the fencing of the north and south rims of the river canyon as proposed in the RIJP for the Caprock Mountain allotment (1078) (see Chapter III, Livestock Grazing) is authorized, the fencing of 5-acre plots would no longer be necessary.

No surface occupancy would be allowed for energy minerals activities and the ACEC would be segregated from all forms of appropriation under the public land laws, including the mining and material sale laws. Signs for interpretation of the cultural resources would be placed at the canyon entrance points and the area would be closed to off-road vehicle use. Primitive recreation sites would be located at both ends of the canyon and maps and brochures would be developed as needed.

The special management requirements of the ACEC also recommend acquisition of the following lands:

T. 19 S., R. 19 W., Section 19: SW1/4 SW1/4
 T. 19 S., R. 20 W., Section 21: SE1/4 SE1/4
 Section 25: E1/2 E1/2
 Section 28: W1/2 NE1/4

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

Overall, the Gila Lower Box WSA is virtually undisturbed by man. However, two impacts of man are located within the WSA. A vehicle trail approximately 1 1/2 miles long provides access to the private land inholding in T. 19 S., R. 20 W., Section 21, SE1/4 SE1/4. Two prospect pits approximately 10 feet deep are located on the mining claims in T. 19 S., R. 20 W., Section 26. Other impacts of man in the area include a few fences which do not detract from the WSA's natural appearance.

Both ends of the Gila Lower Box canyon are minimally impacted by developments along the WSA boundary. The U.S. Geological Survey's (USGS) old gauging station is approximately 400 feet from the northeast boundary of the WSA. The USGS' new gauging station was painted to blend in with the surrounding landscape and does not impair the naturalness of the river canyon. A concrete dam which diverts water from the river into the nearby Sunset Ditch Company's irrigation canal is just outside the west boundary of the WSA.

The canyon of the Gila River appears natural. From the canyon, one can see views of Black Mountain, the Rimrock, and Canador Peak. All of these views are undisturbed by evidence of man's work.

b. Solitude

The Gila Lower Box WSA offers outstanding opportunities for solitude. The WSA is composed of two distinct types of topography; the rugged Gila Lower Box Canyon, Rimrock and side canyons, and the less rugged rolling upland hills to the south. These different types of topography have different potentials for solitude.

The Gila Lower Box and side canyons offer numerous secluded spots. In the canyons, visitors are surrounded by the works of nature. The feeling of solitude away from others and the work of man comes quickly in this environment. The entire Lower Box Canyon and side canyons provide outstanding opportunities of this type. The impacts caused by the USGS' old and new gauging stations or the ditches and canals outside the WSA disappear from view after rounding the river's first bend.

The rolling upland hills south of the Lower Box Canyon offer a different type of solitude. A visitor here has a longer view with fairly open and distant horizons. Traveling across the rolling hills, a visitor may occasionally encounter minimal evidence of man's work, such as fences. Since the hills have no topographic features to funnel visitors into a small area, groups would generally fan out into different areas. Interaction with other groups would be unlikely.



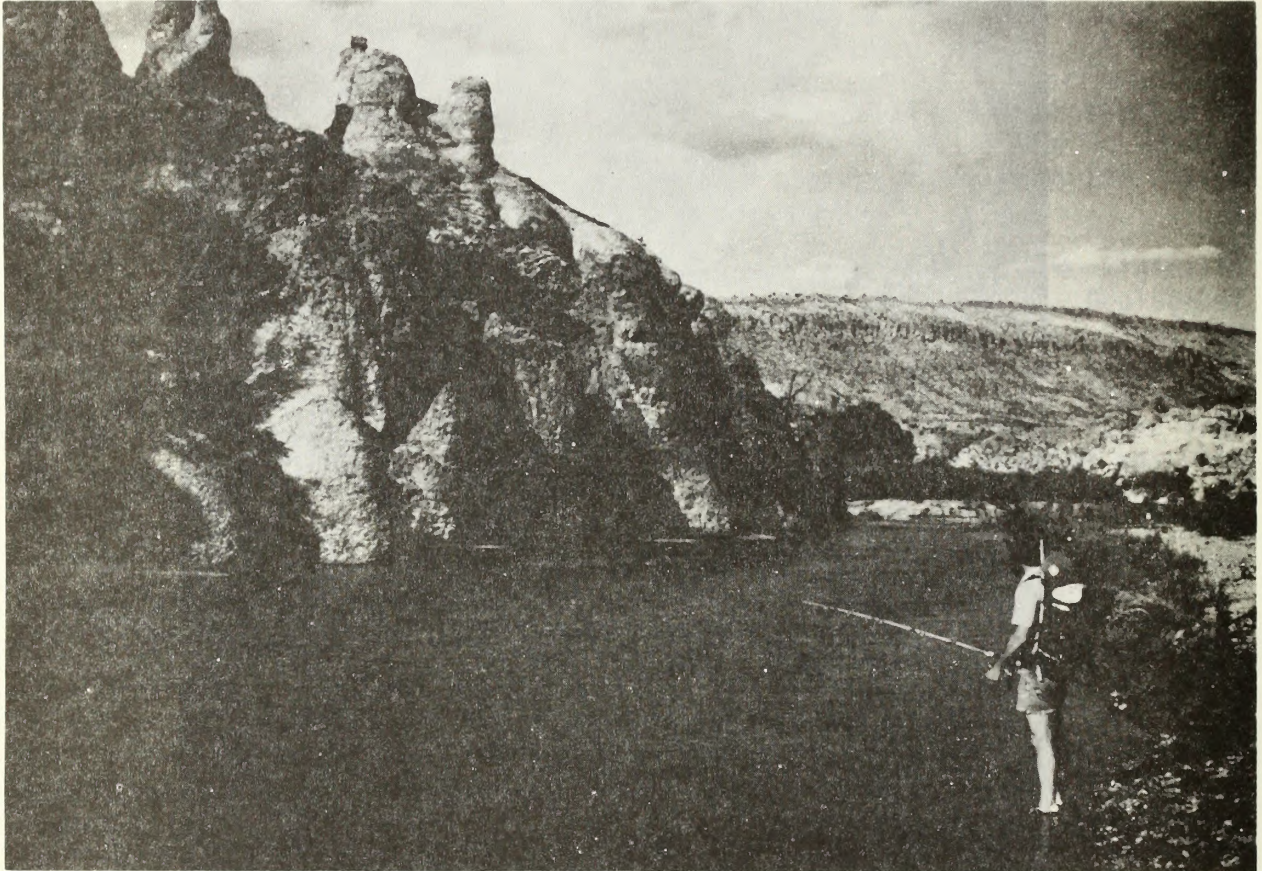
Side canyons of the Gila Lower Box offer numerous opportunities for solitude.

The potential for solitude in that portion of the WSA which is west of the cherry-stemmed road in T. 19 S., R. 20 W., Sections 20 and 29 is impacted somewhat by the sights and sounds of Highway 82 and the farming along the Gila River. Noise from the highway may enter the western edges of this portion of the WSA.

c. Primitive and Unconfined Recreation

The Gila Lower Box WSA offers outstanding opportunities for primitive and unconfined recreation. The combination of the desert

scenery, riparian vegetation, wildlife diversity, and cultural values within the canyon provides a recreational opportunity unique in the region. Any primitive activity is enhanced by this variety of resources. Specific recreational opportunities include hiking, camping, picnicking, nature study, sightseeing, photography, bird hunting, trapping, bird watching, swimming, and during the spring runoff, floating the river with rafts, canoes, or kayaks.



Fishing on the Gila River.

The location and topography of the WSA improves opportunities for recreation. Vehicular access at the ends of the canyon and at Spring on the Bluff and Fisherman's Point allows the user to choose the desired hiking distance. (See Map 9 for general locations of these areas.) Users may park at any number of access points and hike into the canyon. Trips can vary from short day hikes to overnight trips of different lengths. The combination of several access points and numerous side canyons allows variety and diversity in each visit to the area.

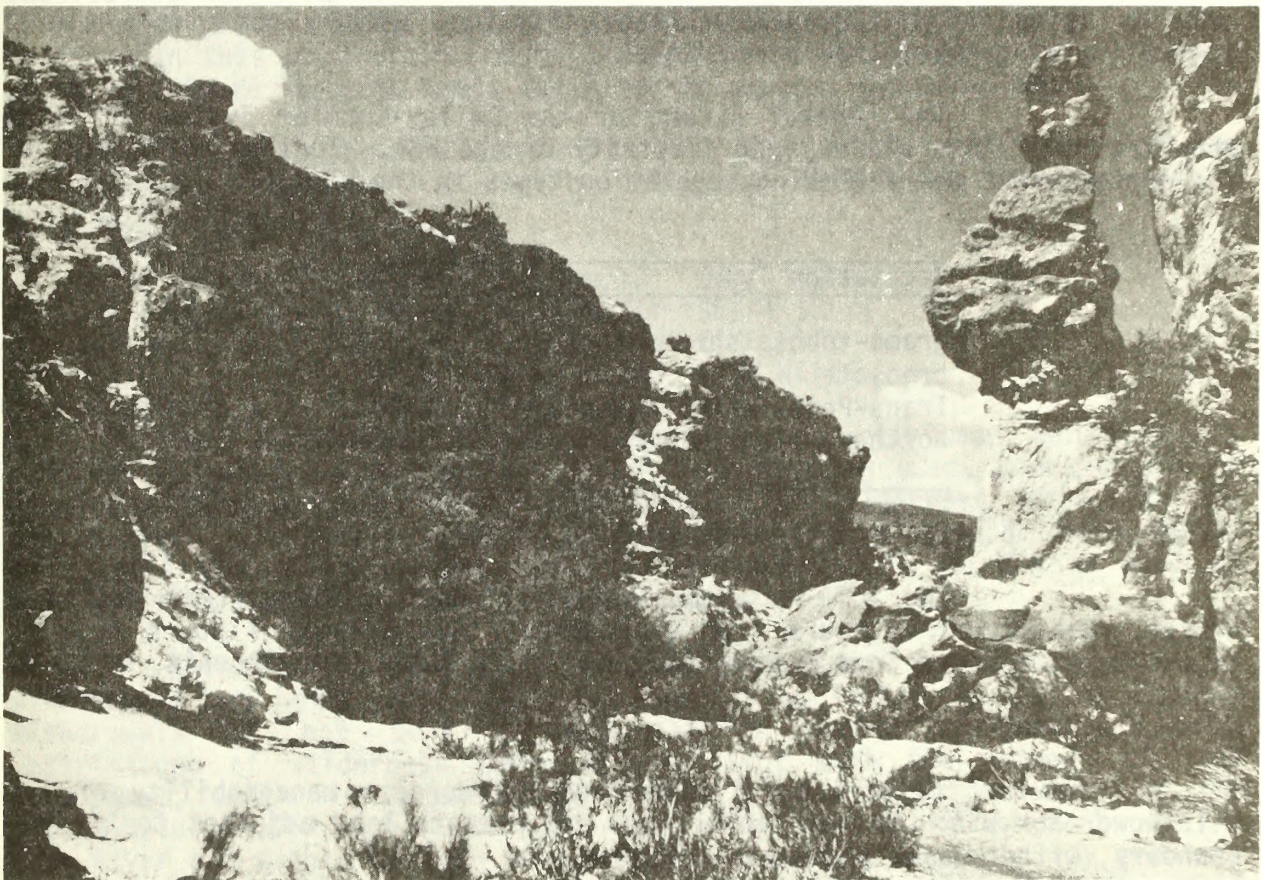
The Gila Lower Box offers a unique variety and quality of recreational opportunities within a publicly accessible area. These opportunities are truly outstanding because of both the quality and the diversity of opportunities within a pristine environment.

2. Special Features

The Gila Lower Box WSA contains special ecological, cultural, and scenic features.

The ecological features include both vegetation and wildlife values of scientific and educational interest. The riparian vegetation associated with the Gila Lower Box is varied and diverse and supports an equally diverse wildlife community. Almost half of the vertebrate species which occur in New Mexico can be found along the lower Gila River. Most of these species are found in the WSA and many are near their geographic distributional limits. The WSA also provides significant habitat for threatened or endangered animal species and habitat for a Bureau sensitive plant species proposed for Federal listing and a New Mexico State Heritage Program special concern element plant species. (See Chapter II, Vegetation and Wildlife.)

The special geological features of the WSA are of educational value. The Lower Box portion of the Gila River displays many of the characteristics of a youthful stream (see Chapter I, Climate and Topography).



Erosional columns, called Hoodoos, add geologic interest to the WSA's scenery.

The special cultural features in the WSA include several large petroglyph panels and a number of rock shelters and rock structures (see Chapter II, Cultural). The Gila Lower Box WSA also has outstanding scenic features. The Lower Box Canyon has a Class A (high) scenic quality rating (see Chapter II, Visual).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the area as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	2,138
creosote	3,380
Trans-Pecos shrub savanna	2,583
northern flood plain forest	454

b. Distance from Population Centers

The WSA is approximately 3 hours driving time from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from El Paso, Texas; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Several factors could affect the wilderness manageability of the Gila Lower Box WSA: private inholdings and private land adjacent to the WSA boundary, withdrawals, and mining claims.

There are 120 acres of private inholdings in the Gila Lower Box WSA. The 40 acres of private land in T. 19 S., R 20 W., Section 21 are used as a salting ground by the owner. A primitive vehicle trail provides the existing access to the private inholding. The vehicle route is located so that it crosses several steep arroyos near the south boundary of the WSA.

These arroyos occasionally flood and wash out the route so that vehicle passage is difficult or impossible. This access route and the current use of the parcel does not significantly affect the wilderness values of the WSA. However, occasional maintenance of the washed out crossings may be necessary if existing vehicular access is to be maintained. Development of the existing primitive route into a high standard road could impact wilderness values since additional vehicular access into the center of the WSA could reduce visitor management options, increase noise, and slightly reduce the local area's apparent naturalness. However, at the present time, upgrading of the route does not appear likely or necessary for the existing use.

There is no vehicular access to the 80-acre private inholding in Cottonwood Canyon. Existing use of the spring on this inholding for watering of livestock would not affect the wilderness manageability of the Gila Lower Box WSA.

The Gila River passes through the private lands adjacent to the WSA in T. 19 S., R. 19 W., Section 19, and T. 19 S., R. 20 W., Section 25. These private lands contain sections of the Gila River and one of the more interesting south-cutting side canyons, Box Canyon. Box Canyon is over a mile long and contains cultural, wildlife, and recreational values. Visitors in this portion of the Gila Lower Box could inadvertently trespass on these private lands to cross the river or explore the side canyon.

The following 320 acres of private land within and adjacent to the WSA boundary should have a high priority for acquisition if the area is designated wilderness:

T. 19 S., R. 19 W., Section 19: SW1/4 SW1/4
T. 19 S., R. 20 W., Section 21: SE1/4 SE1/4
Section 25: E1/2 E1/2
Section 28: W1/2 NE1/4

The acquisition of these lands would eliminate manageability problems associated with the impacts of nonwilderness uses, construction or upgrading of access, and inadvertent trespass of wilderness users onto the private land. In addition, these lands contain wildlife and cultural values and acquisition would enhance the special features of the WSA as well as opportunities for solitude and primitive recreation.

The San Carlos Indian Irrigation Project and other powersite withdrawals are within the WSA. The San Carlos Indian Irrigation Project withdrawals do not pose a manageability problem. The management restrictions of wilderness would not conflict with the purpose of this withdrawal, which is watershed protection. The potential uses of the approximately 4,760 acres under powersite withdrawal along the banks of the Gila River and within the WSA boundary do not pose a manageability problem, but rather a resource conflict. It is highly unlikely that the area would be designated wilderness before the powersite withdrawal issue is settled. It is assumed that the issue of powersite development versus wilderness would either be settled administratively by a revocation of the withdrawals before the matter reaches Congress, or the matter will be settled by Congress as it decides whether the parcels will be dedicated to wilderness or power development.

There are two mining claims within the Gila Lower Box WSA. These claims could affect the manageability of the WSA as follows.

Once an area is designated wilderness, the provisions of the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the WMP, holders of mining claims validly established in the area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations "Surface Management of Public Lands Under U.S. Mining Laws." To verify that a claim is valid, a minerals examination and subsequent minerals report must be prepared. The minerals examination and report must confirm that as of the date of wilderness designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of labor and means, with a reasonable prospect of success in developing a valuable mine. Although exercise of the rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, there is a possibility that the wilderness values of the WSA could be degraded after the area is designated wilderness.

The likelihood of extensive development on these claims is remote. The onyx being mined is primarily of interest to rockhounds and is not very profitable.

The southern boundary of the WSA is located along a vehicle trail. The trail is revegetating and cannot be located in places where the natural rehabilitation is nearing completion. This makes it difficult to locate the WSA boundary on the ground and also complicates legal description of the WSA boundary. Location of the wilderness boundary along a legally describable line would simplify legal description of the wilderness area as well as the identification of the wilderness boundary on-the-ground.

The Gila Lower Box WSA could be managed to preserve its wilderness character. The highest quality wilderness values in the WSA are concentrated in the Lower Box and its side canyons. These values revolve around the Gila River and the associated riparian vegetation. Special features and values in the WSA include wildlife, cultural sites, and opportunities for solitude and recreation. All of these values and special features could be preserved on a sustained yield basis over the long-term under wilderness management.

V. PUBLIC INVOLVEMENT OVERVIEW

Numerous public comments were received on the Gila Lower Box unit during the public review periods on the BLM New Mexico Wilderness Review Initial Inventory Decisions (July 1979) and the BLM New Mexico Wilderness Study Area Proposals (March 1980).

This WSA was one of the ten most discussed units during the comment period on the WSA Proposals. The majority of personal letters supported WSA status for the area. Most of the letters favoring WSA status for the area stated that the area offers outstanding opportunities for solitude and primitive types of recreation and cited the supplemental value of the petroglyphs, threatened or endangered species, and especially the unique values of a large natural riparian area in a desert setting.

Letters opposed to the WSA status of the area primarily cited resource conflicts such as mining, powerlines, recreational use, and ranching activities. Some of these comments contained maps, photographs of developments in and around the WSA, and a list of mining claims.

Changes from the BLM's original proposed WSA boundary resulted from public comments on private inholdings and topographic boundaries. As a result of these comments, errors in the location and extent of private inholdings were corrected and the northern boundary of the WSA was moved south to the edge of the Rimrock. All of these comments were retained and reviewed during the wilderness study.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (DEA) (BLM 1983), 32 public inputs were received on the Gila Lower Box WSA. Six of the inputs expressed opposition to wilderness designation. Most of the opposing comments cited the oil and gas and mineral potential of the area as reasons for opposing wilderness designation. Asarco expressed the opinion that undiscovered minerals might be found if the area were left open to exploration. Two industry respondents, Union Molycorp, Inc., and the Minerals Exploration Coalition, favored further reduction in the size of the area recommended suitable for wilderness to exclude existing mining claims and areas along the eastern margin that demonstrate favorable mineral potential. One comment questioned the wisdom of using public funds to acquire private lands to enhance the wilderness area. The comment indicated that such acquisition amounts to buying wilderness areas.

The Phelps Dodge Corporation cited roads and mining claims in the WSA and expressed the opinion that the value of the ranch would be lowered and the livelihood of the rancher endangered by wilderness designation. The route specifically discussed in these comments does not meet the definition of a road as defined in the Wilderness Inventory Handbook (BLM 1978) and the mining claim information is not up-to-date. Only 2 of the 11 mining claims discussed are within or overlap the boundary of the WSA. Phelps Dodge speculated that wilderness designation could delay Silver City and vicinity citizens' attempts to acquire "sufficient water for simple existence in that area." Another Phelps Dodge comment stated that, "...the BLM Las Cruces District Advisory Council,...has recommended against the wilderness area in a meeting in Lordsburg. The Council's recommendation is that...the river be

named an ACEC." The minutes of this meeting (see the Las Cruces/Lordsburg Final MFP Amendment/EIS, 1983) do not support this assertion. The minutes read as follows: "We (the District Advisory Council) recommend that the objectives (of the ACEC) as modified...are appropriate for the Gila Lower Box... ." The Council stressed that they did not want to make a motion on the choosing of wilderness or ACEC at this time.

The New Mexico Department of Agriculture expressed the opinion that, "...the special designation as an ACEC would be adequate in protecting the outstanding qualities...without completely removing the availability of certain range improvement techniques which would enhance the resources (i.e., wildlife habitat, vegetation, etc.)."

The majority of the inputs, 26 personal letters, favored wilderness designation for the Gila Lower Box WSA. One petition with fifteen signatures was also received. Two of the personal letters and the petition listed no reasons for supporting wilderness designation.

Many of the comments favoring wilderness designation for the Gila Lower Box reiterated the supporting reasons cited in previous comment periods (see second paragraph in this chapter). Additional comments stressed the importance of protecting what little Sonoran habitat there is in New Mexico and the remaining undisturbed riparian habitat in New Mexico. Additional supporting reasons cited the area's naturalness and scenic values.

Taking into account other forms of protection and other areas that could possibly represent the biological communities involved, the New Mexico Natural History Institute ranked the Gila Lower Box the number one priority for wilderness designation out of the nine areas discussed in the DEA in terms of natural area planning.

Fourteen of the pro-wilderness letters favored the All Wilderness Alternative over the Amended Boundary Alternative. Several of these letters included reasons for favoring the All Wilderness Alternative. One comment stated that the excluded area is natural, would add diversity to the designated wilderness, and would protect the west part of the river. The comment added that less high quality wilderness values is an inappropriate reason for boundary adjustments. Another respondent speculated that designation of the area within the Amended Boundary would allow future encroachment of developments around the wilderness periphery that might impact wilderness values. One comment indicated that the minor benefits of the Amended Boundary Alternative do not justify exclusion of over 3/10 of the WSA from the area recommended suitable.

Miscellaneous supporting reasons and comments included: the area is manageable, resource conflicts are not significant, and the majority of the public supports wilderness designation. One comment also indicated support for the ACEC and another agreed that the private inholdings in Cottonwood Canyon should be acquired.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 8,555 acres of public land within the Gila Lower Box WSA would be recommended suitable for wilderness designation. (See Map 9 for location of WSA boundary.)

If designated wilderness, the existing uses and activities in the area and potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (WMP) (1981). Upon designation of the Gila Lower Box WSA as wilderness, the 2,469 acre Gila River Lower Box Riparian Area of Critical Environmental Concern (ACEC) would be cancelled without further planning action. The management objectives of the ACEC would be met through wilderness management (Las Cruces/Lordsburg Final MFP Amendment/EIS, Proposed Plan, 1983). Briefly, these objectives are: (1) to protect and improve riparian vegetation, (2) to maintain and improve water quality, (3) to maintain and improve channel stability, (4) to maintain the recreation and cultural resources, and (5) to allow livestock grazing to the extent that it is compatible with the other objectives. (See Chapter III, Wildlife, for a detailed discussion of the ACEC management objectives and special management requirements.) Projects and procedures outlined in the special management requirements for the ACEC could require modification to bring them into conformance with the WMP.

Under the All Wilderness Alternative, the impacts to wilderness would be significant because of the added protection of Congressional designation. The impacts on water, soils, vegetation, and wildlife could also be significant under this alternative. The impacts on nonprimitive types of recreation, air, and education/research in the Gila Lower Box WSA were clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

There has been no production of energy minerals within the WSA. Since potential is low, energy minerals would not be significantly impacted in the short-term under the All Wilderness Alternative. However, it is assumed that exploration and leasing under the mineral leasing laws would not be allowed after wilderness designation. There would be no opportunity for further assessment of the area's energy minerals potential or for development and production. Energy minerals could be adversely affected in the long-term.

In this area, production of locatable minerals has been limited to banded calcite, locally known as onyx. It is assumed that exploration, prospecting, and location of new mining claims would not be allowed after wilderness designation. After designation, mining could continue under the Wilderness Management Policy (WMP) if these claims were declared valid after a mineral examination and mining activities would be regulated under the Surface Management Regulations (43 CFR 3809) to prevent unnecessary and undue degradation. However, mineral trends could not be followed out of existing valid claim boundaries.

Full development of these claims and other locatables is not expected, therefore, under this alternative, the impact to locatable minerals would not be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

In general, the restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation.

The water control structures recommended in the Gila Management Framework Plan (MFP) (BLM 1977) for watershed improvement could be authorized only if (1) they could be constructed in such a way that wilderness values would not be impaired and (2) if approved by the BLM Director. These projects would reduce flood and sediment damage in the individual watersheds where constructed and also downstream by reducing the volume and peak rate of surface runoff from small ephemeral tributaries of the Gila River. Although the impacts could be significant for the individual watersheds, the structures would be insignificant in reducing flood and sediment damage downstream on the Gila River. Vegetation loss and soil disturbances resulting from the initial construction of the structures would be outweighed in the long-term by an improvement in vegetative cover and soil stabilization. If the BLM Director does not approve the projects as required by the WMP, the benefits to the individual watersheds would not be realized under this alternative.

Although the ACEC designation would be cancelled under this alternative, the fencing of small plots to protect and improve the riparian vegetation could continue if approved by the State Director. The fencing would be acceptable under the WMP, which states that "Management will use the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective. The chosen tool, equipment, or structure should be the one that least degrades wilderness values temporarily or permanently." The fencing and water gap proposed in the RIJP for the Caprock Mountain allotment (1078) (see Chapter III, Livestock Grazing) could also be approved if deemed necessary for rangeland protection. In addition, either of these fencing projects would improve the riparian vegetation in the long-term and, as a result, promote perpetuation of threatened or endangered species. Projects for this purpose are allowable under the WMP.

If the fenced plots or the fencing of the rims and the water gap are approved, the vegetation, soils, and water in the Gila Lower Box would be impacted as follows.

Fencing to exclude livestock would result in improved plant vigor, stand structure, and ground cover on the riparian vegetation within the excluded areas. Bottomland species could reestablish themselves. In the long-term, significant improvement in the condition of the riparian vegetation would occur. A good growth of riparian vegetation would help stabilize channel erosion, reduce flood velocities, and reduce sediment loads. Improved ground cover would stabilize soils and reduce

surface runoff. In areas where surface runoff is reduced, surface water quality would improve slightly because of the lower amounts of suspended sediments and dissolved solids transported by runoff water. Improved riparian vegetation would provide overhanging cover along the river which would moderate water temperature. Improved riparian vegetation would also contribute to enhancement of the hydrologic functions of surface water storage and ground water recharge.

The dirt tank proposed in the Las Cruces/Lordsburg MFP Amendment/EIS (1983) for the Donaldson allotment (1016) could be constructed if it were determined through site-specific analysis to be necessary for the purpose of rangeland and/or wilderness protection. Road construction and motorized access to the dirt tank would not be authorized. Installation of the dirt tank would affect vegetation production and compact soils on an area of approximately 40 acres as a result of increased livestock use around the tank. Native vegetation probably would not reestablish itself in this area. However, the dirt tank would provide another source of water on the allotment which could result in more even distribution of existing animal grazing use. This would balance utilization of the vegetative resource on the Donaldson allotment by relieving grazing pressure around existing livestock waters.

The impacts to soils, water, and vegetation could be significant under this alternative.

b. Wildlife

Under this alternative, the wildlife and wildlife habitat would be managed under a Habitat Management Plan (HMP) (Gila MFP 1977). The HMP would cover most of the riparian areas on Federal land in the Gila Lower Box area including many of the tributaries into the Gila River. The management objective of the HMP would emphasize the riparian vegetation and associated wildlife species. Many of these species are threatened or endangered (see Chapter III, Wildlife). Projects proposed in the HMP would not be significantly affected under wilderness management because the WMP allows habitat manipulations or wildlife projects for the benefit of threatened or endangered species as long as the resulting changes would be compatible with the preservation of wilderness character, consistent with wilderness management objectives for the area, and if the projects are the minimum necessary to accomplish the task. However, project approval from the State Director would be required on a case-by-case basis.

If the Gila River Lower Box Riparian ACEC projects involving fencing small plots to protect riparian vegetation is allowed to continue under approval of the State Director or if the fencing of the canyon rims and water gap as proposed for the Caprock Mountain allotment (1078) is authorized, significant improvements in the riparian wildlife habitat and aquatic habitat could occur. More than 300 terrestrial wildlife species and 12 fish species would benefit. Seven of the terrestrial species and two of the fish species are either on Federal or state endangered lists.

Wilderness management restrictions on surface disturbing and mechanized activities would provide long-term protection for wildlife habitat. Restrictions on vehicular access would reduce the potential for harassment and poaching of wildlife and could reduce hunting pressure in the area.

The impacts on wildlife and wildlife habitat could be significant under this alternative.

c. Visual

Existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I, which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

The removal of the U.S. Geological Survey's (USGS) new gauging station would slightly enhance the visual resources in the east end of the Gila Lower Box WSA. The gauging station was authorized under a temporary ROW with the stipulation that the station would be removed if the area was designated wilderness.

The impacts on visual resources would not be significant under this alternative.

d. Cultural

Under this alternative, the ACEC designation would be cancelled upon designation of the Gila Lower Box as wilderness. The ACEC management objectives include protecting and interpreting the petroglyph panels and rock shelters within the 2,469 acre area through the use of signs and, as needed, maps and brochures. Under wilderness management, study or management of cultural resources would not normally include interpretation activities. Therefore, interpretative signs for cultural resources within the designated wilderness area would be removed. Maps and brochures for visitor education would be consistent with wilderness management objectives.

The impacts to cultural resources would not be significant under this alternative.

e. Livestock Grazing

Generally, motorized access on existing vehicle trails within the WSA would not be allowed. However, permits for vehicular access to maintain existing rangeland developments in the WSA that have existing access could be authorized if there were no practical alternatives. Affected rangeland developments include 1 mile of boundary fence between the Caprock (1078) and Lazy B Cattle Company (5058) allotments and 3/4 miles of interior fence on the Caprock allotment (1078).

The proposed dirt tank on the Donaldson allotment (1016) or the proposed fencing and water gap for the Caprock allotment (1078) could be constructed if it were determined through site-specific analysis that the projects are necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access to the dirt tank would not be authorized.

Impacts to livestock operators would consist primarily of minor inconveniences due to restricted vehicular access and would not be significant under this alternative.

f. Realty Actions

Under this alternative, the USGS' temporary right-of-way for the new gauging station just inside the WSA boundary (T. 19 S., R. 19 W., Section 19, NW1/4 NE1/4) would be revoked and the gauging station would be removed. The USGS could no longer collect data on water quality and water levels at this site. This could slightly impact the USGS' capability of warning residents downstream of flood conditions.

It is assumed that the powersite withdrawals would be revoked administratively or Congress would deal with conflicts between powersite development and wilderness designation before the area is designated wilderness.

The management restrictions of wilderness would not conflict with the San Carlos Indian Irrigation Project withdrawal since the purpose of this withdrawal is watershed protection.

The impacts on realty actions would not be significant under this alternative.

g. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. The area would retain its natural appearance and be managed to provide outstanding opportunities for solitude and primitive recreation. The installation of the water gap across the river in the area south of Canador Peak would have a minimal impact on floating opportunities. The water gap would be less than 1 mile upstream of the Sunset Ditch Company's diversion dam in T. 19 S., R. 20 W., Section 21, W1/2 W1/2, where portaging is already required. The special features of the area would be maintained through wilderness management.

Management of wildlife and wildlife habitat under the HMP and transplanting desert bighorn sheep into the WSA would enhance the special wildlife features of the WSA.

The impacts to wilderness values could be significant under this alternative.

B. Amended Boundary

Under the Amended Boundary Alternative, 5,835 acres of public land within the Gila Lower Box WSA would be recommended suitable for wilderness designation (see Map 9 for amended WSA boundary). The amended boundary would exclude 2,720 acres of public land on the southwest, south, and east boundaries of the WSA.

If the area within the amended boundary is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (1981). Upon designation of the area within the amended boundary as wilderness, the 2,631-acre Gila Lower Box Riparian Area of Critical Environmental Concern (ACEC) would be cancelled without

further planning action. The management objectives of the ACEC would be met through wilderness management and would be affected as described under the All Wilderness Alternative.

Under this alternative, the impacts to wilderness values on the 5,835 acres within the amended boundary would be significant because of the added protection of Congressional designation.

Under this alternative, the impacts on water, soils, vegetation, and wildlife could be significant. The impacts to livestock grazing and cultural resources would not be significant. The impacts to all these resources would be the same as those described in the All Wilderness Alternative; therefore, they were not discussed below.

Under the Amended Boundary Alternative, impacts on nonprimitive types of recreation, air, and education/research were clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

Impacts to mineral resources on the 5,835 acres within the amended boundary would be the same as those described under the All Wilderness Alternative. The amended boundary does not exclude the existing mining claims.

The 2,720 acres outside the amended boundary would remain open to mineral entry. Locatable mining activities in this area would be regulated to prevent unnecessary and undue degradation under the Surface Management Regulations (43 CFR 3809). An area of approximately 100 acres in T. 19 S., R. 20 W., Section 20, SE1/4, is within the Gila River Riparian Area and would be leased for energy minerals with a protective stipulation for threatened or endangered species habitat. The remainder of the 2,720 acres outside of the amended boundary would be leased with no special stipulations.

The impacts to mineral resources under the Amended Boundary Alternative would not be significant.

2. Impacts to Other Resources and Uses

a. Visual

The impacts to visual resources on the 5,835 acres inside the amended boundary would be the same as those described under the All Wilderness Alternative.

The 2,720 acres outside the amended boundary would be managed as a VRM Class II. In VRM Class II areas, minor to moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention.

The impacts to visual resources would not be significant under the Amended Boundary Alternative.

b. Realty Actions

Under this alternative, the USGS' new gauging station would be excluded from the area designated wilderness. A permanent ROW could be issued for the gauging station.

c. Wilderness Values

The impacts to wilderness values under the Amended Boundary Alternative would be the same as those described under the All Wilderness Alternative with the following exceptions.

Approximately 2,720 acres in the southwest, south, and east portions of the WSA would not be protected by Congressional designation. The east boundary of the WSA would be adjusted to exclude the USGS gauging station. This would slightly enhance the naturalness of the area recommended suitable for wilderness. The boundary adjustments in the south and southwest exclude portions of the WSA with low quality opportunities for solitude (see Chapter IV, Solitude). Location of the southern boundary of the designated wilderness along section lines would simplify legal description and on-the-ground identification of the wilderness boundary (see Chapter IV, Manageability). At the present time, it appears that the area within the amended boundary could be managed as wilderness.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the Gila Lower Box WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, 2,469 acres of the Gila Lower Box WSA would be managed as the Gila River Lower Box Riparian Area of Critical Environmental Concern (ACEC) (BLM Las Cruces/Lordsburg MFP Amendment/EIS, 1983). (See Map 9 for general location of the ACEC.) The management objectives of the ACEC would be to protect and improve riparian vegetation, to maintain and improve water quality and channel stability, and to maintain existing recreation and cultural resources. Livestock grazing would be allowed to the extent that it is compatible with the other objectives.

The special management requirements would include fencing approximately 6 plots of approximately 5 acres each to protect riparian vegetation. Livestock use would be excluded on the fenced plots. However, if the fencing of the canyon rims and the water gap as proposed in the RIJP for the Caprock Mountain allotment (1078) is authorized, the fencing of small plots would no longer be necessary. (See Chapter III, Livestock Grazing.) No surface occupancy for energy minerals activities would be allowed and the area would be segregated from all forms of appropriation under the public land laws including the mining and mineral material sale laws. The boundary of the NSO and segregated area is drawn on legal subdivisions to simplify legal descriptions and totals 2,631 acres. The area would be closed to off-road vehicle use. Interpretive signs would be placed at main entrance points to the canyon to interpret the cultural resources of the area. Primitive recreation sites with trash cans and signs could be

developed at either end of the canyon to provide for parking and serve as trailheads. The special management requirements for the ACEC also include a recommendation for acquisition of the following 320 acres of private land for inclusion in the ACEC:

T. 19 S., R. 19 W., Section 19: SW1/4 SW1/4
 T. 19 S., R. 20 W., Section 21: SE1/4 SE1/4
 Section 25: E1/2 E1/2
 Section 28: W1/2 E1/4

Existing and potential uses on the remaining 6,086 acres within the Gila Lower Box WSA would be managed in accordance with the Gila MFP (BLM 1977) and the Las Cruces/Lordsburg MFP Amendment/EIS (BLM 1983) (see Chapter III).

As noted in Chapter IV, Manageability, there are approximately 4,760 acres of powersite withdrawals along the river within the WSA boundary. Approximately 900 acres of the withdrawals are within the boundary of the ACEC. The powersite withdrawals represent valid existing rights. If these rights are exercised to use the area for powersites and related purposes, the management objectives of the ACEC would be subordinate to the valid existing rights. The powersite withdrawals are currently under review by the USGS, Water Resources Division. Predictions as to which of the withdrawals would be feasible for powersite locations are beyond the scope of this document, as are estimates of the impacts of powersite development.

Under this alternative, the impacts on wilderness values, water, soils, vegetation, and wildlife could be significant.

Under the No Action/No Wilderness Alternative, impacts on nonprimitive types of recreation, air, education/research, and realty actions were clearly insignificant. For this reason, these resources were not included in the following discussions.

1. Impacts to Wilderness Values

Under the No Action/No Wilderness Alternative, the wilderness values of the Gila Lower Box would not be provided with long-term Congressional protection. Management of all of the WSA acreage as specified in land use plans would be subject to administrative change in the long-term.

The management of wildlife under a Habitat Management Plan (HMP) and the transplanting of desert bighorn sheep into the area would enhance the special wildlife features of the WSA. Approximately 2,469 acres of the WSA would be administratively protected as the Gila River Lower Box Riparian ACEC. Improvement in the riparian vegetation as a result of exclusion of livestock from the fenced plots or from the entire river canyon would enhance the natural values in the Lower Box portion of the WSA in the long-term. NSO stipulations on energy minerals leases and segregation from mineral entry would limit surface disturbance that could impact the area's naturalness.

Improved riparian vegetation would benefit birdwatching opportunities and improvement in watershed conditions and water quality would enhance water-based recreation opportunities such as swimming, kayaking, rafting, and canoeing. The installation of the water gap across the river in the area south of Canador Peak would have a minimal impact on floating opportunities. The water gap would be less than 1 mile upstream of the Sunset Ditch Company's diversion dam in T. 19 S., R. 20 W., Section 21, W1/2 W1/2, where portaging is already required. Improvement in fisheries habitat could slightly improve fishing opportunities. Designation of the ACEC as limited to existing roads and trails for ORV use, the development of primitive recreation sites at either end of the Gila River Canyon, the installation of signs at major access points describing cultural resources, and the acquisition of adjacent private lands would generally enhance existing primitive recreation opportunities within the ACEC. The portion of the WSA within the ACEC (approximately 29 percent of the WSA) could be expected to substantially retain its wild character as long as the area is administratively protected.

The construction of the water control structures proposed in the Gila MFP (BLM 1977) for watershed protection could degrade the quality of the apparent naturalness in the southern part of the WSA. The impacts on naturalness would vary according to the location, size, design, and number of structures constructed.

The impacts to wilderness values under this alternative could be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Fencing selected plots within the ACEC or fencing the canyon rims and installing the water gap as proposed in the RIJP for the Caprock Mountain allotment (1078) would impact water, soils, and vegetation as described under the All Wilderness Alternative. The impacts could be more significant under this alternative because projects designed to improve the riparian vegetation would not be constrained by the WMP. This alternative would offer more flexibility in management of the riparian vegetation. State Director approval would not be required for proposed projects.

The construction of the water control structures proposed in the Gila MFP (BLM 1977) could reduce flood and sediment damage as described under the All Wilderness Alternative. However, the impacts could be more significant for the individual watersheds under this alternative since location of the structures would not be constrained by wilderness considerations. Vegetation loss and soil disturbances resulting from the initial construction of the structures would be outweighed in the long-term by an improvement in vegetative cover and soil stabilization. The structures would not significantly reduce flood and sediment damage downstream on the Gila River.

The impacts on water, soils, and vegetation in the Gila Lower Box could be significant under this alternative.

b. Wildlife

Impacts to wildlife would be essentially the same as those described under the All Wilderness Alternative. Wildlife habitat would be managed under the provisions of the HMP and ACEC. This alternative would offer more flexibility in management and State Director approval would not be required for proposed projects.

The impacts on wildlife could be significant under this alternative.

c. Visual

The entire WSA would be managed as a VRM Class II, which permits minor to moderate changes in the basic elements of the landscape as a result of management activities as long as the changes do not attract attention.

Existing and proposed BLM plans do not identify any activities that would significantly impact visual resources. The existing Class A scenic quality in the Lower Box and the existing Class B scenic quality in the southwest and southern parts of the WSA would probably be substantially retained in the long-term.

d. Cultural

Under this alternative, the cultural resources of the Gila River Lower Box ACEC would be interpreted through signs and, as needed, maps and brochures. The cultural resources would be administratively protected under this alternative. The impacts to cultural resources would not be significant.

e. Minerals

Under this alternative, 2,631 acres covering the ACEC would be leased for energy minerals with a No Surface Occupancy stipulation. This area would also be segregated from all forms of appropriation under the mining and mineral leasing laws. Due to the low to moderate potential for both energy and nonenergy minerals and the small amount of acreage involved, the impacts on mineral resources would not be significant under this alternative.

f. Livestock Grazing

The special management requirements for the ACEC would not significantly impact livestock grazing. The ACEC encompasses approximately 100 acres of the Donaldson allotment (1016) and 2,369 acres of the Caprock allotment (1078). There would be no loss of animal unit months on these allotments as a result of the exclusion of livestock grazing on the small plots or as a result of the exclusion of livestock grazing from the entire canyon bottom by fencing the canyon rims. Vehicle use would be allowed on existing roads in the ACEC. There would be no restrictions on vehicle use in the remainder of the area. The impacts to livestock grazing would not be significant under this alternative.

APPENDIX J

LAS UVAS MOUNTAINS WSA (NM-030-065)

I. GENERAL DESCRIPTION

A. Location

The Las Uvas Mountains Wilderness Study Area (WSA) is located in northwestern Dona Ana County, approximately 30 miles northwest of Las Cruces, New Mexico, and 7 miles south of Hatch, New Mexico.

The Souse Springs, New Mexico, U.S. Geological Survey (USGS) topographic quadrangle covers the WSA. The map is at the 7 1/2-minute scale.

B. Climate and Topography

The Las Uvas Mountains WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is slightly less than 9 inches, however, a wide variation in annual totals is characteristic of arid climates. More than half of the total annual precipitation occurs from July to September. Rainfall during these months usually is from convective thundershowers that are commonly brief and intense.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is in the middle 90's. In January, the coldest month, average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

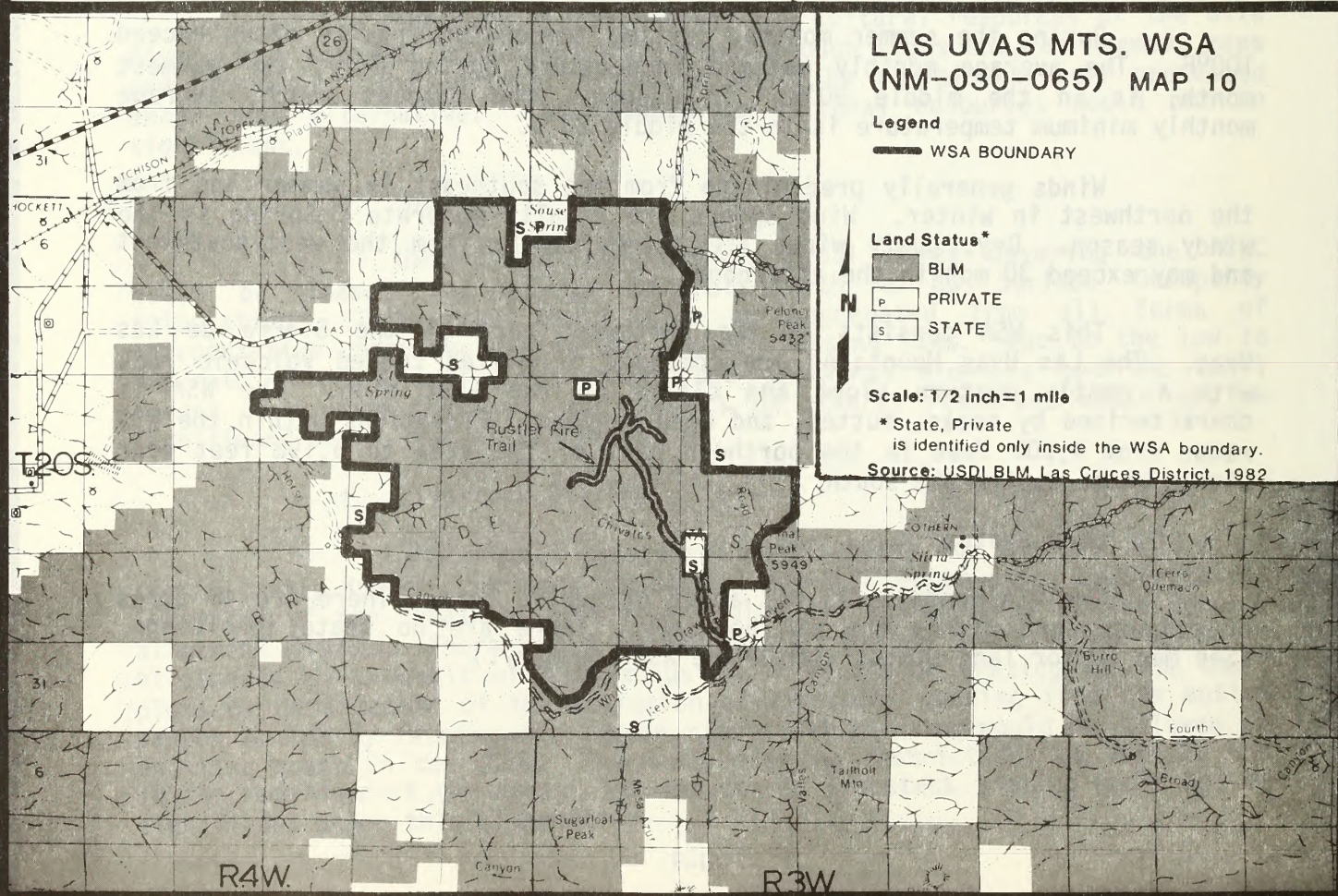
This WSA consists of the northwest part of the Sierra de Las Uvas. The Las Uvas Mountains are composed of tilted bedded volcanic rock with a gentle western slope and cliffs on the east side. The WSA is characterized by mesas, buttes, and deep canyons. Elevations within the WSA range from 4,600 feet in the northern part of the area to 6,198 feet near Little White Gap in the south.

C. Land Status

The WSA contains 11,067 acres of public land. There are 40 acres of private land within the WSA boundary. There are no state inholdings. (See Map 10 for land status within the WSA boundary.)



Aerial view of the Las Uvas Mountain WSA.



D. Access

Legal access to the northeast boundary of the Las Uvas Mountains WSA is by way of County Road E05 which runs south off of State Highway 26, approximately 1/2 mile west of Hatch.

County Road E02, which runs southeast off of State Highway 26, approximately 7 miles southwest of Hatch, terminates on private land about 1/4 mile from the northwest part of the WSA. County Road E06 (Barksdale Road), which branches off of U.S. Highway 85 about 9 miles southeast of Hatch, also terminates on private land, in T. 20 S., R. 3 W., Section 28, about 1/2 mile from the southeast part of the WSA. The cherry-stemmed Rustler Fire Trail road provides physical access across this parcel of private land into the center of the WSA. The White Gap Pass Road connects the ends of these two county roads and provides physical access along the southern boundary of the WSA.

II. EXISTING RESOURCES

A. Geology

The Las Uvas Mountains WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake deposits.

Locally, the Sierra de Las Uvas is a faulted, domed uplift within a structural feature known as the Goodsight-Cedar Hills depression. The major stages of evolution have been late Cretaceous uplift, Tertiary volcanism, mountain building, and rifting.

Volcanism produced several ashflow tuffs. Late Tertiary volcanism produced eruptions of basaltic andesite. It appears that eruptions of basaltic andesite, uplift of the Sierra de Las Uvas dome, and initial faulting within the Rio Grande Rift were contemporaneous events.

The fault pattern within the WSA is complex. Most are high-angle normal faults trending northwest. Two major structures occur in the WSA: a northwest-trending graben near Big White Gap bounded on the southwest by the Big White Gap fault; and a north-trending graben northeast of Big White Gap bounded on the west by the Little White Gap fault and on the east by the Road Canyon fault.

B. Water

The Las Uvas Mountains WSA forms part of a divide that separates the Mimbres Basin from the southern Palomas Basin. To the northeast, drainage is into the southern Jornada del Muerto. The Mimbres Basin is a noncontributing closed basin, while the Palomas Basin and southern Jornada del Muerto contribute to the larger Rio Grande Basin.

Surface water within the WSA drains into the river basins through an ephemeral stream system. Principal drainages include Horse Canyon and tributaries to Placitas Arroyo and Arroyo Angostura. Surface flow generally occurs as a result of summer thundershowers.

Ground water moves into the Rio Grande Valley from the uplands to the valley border and then moves down the valley. Ground water is available primarily in the alluvial fill down gradient from the WSA. Significant recharge to the ground water reservoir occurs in the major canyons and arroyos during flood runoff. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Two major soil types occur within the Las Uvas Mountains WSA. At higher elevations on mountain tops and steep sideslopes, soils are typically cobbly and shallow over basalt bedrock. The soils are interspersed between areas of rock outcroppings. Around the mountain footslopes in the northern part of the WSA, the soils are gravelly and typically have a cemented caliche layer within 30 inches of the surface.

D. Vegetation

1. General

The vegetation and associated range sites within the Las Uvas Mountains WSA consist of two major types:

Vegetation Type	Range Site	Federal Acres
Grass	Mountains	9,276
Creosote	Gravelly	1,791

The Las Uvas Mountains are predominantly covered with grass species consisting of black grama, fluffgrass, tobosa, and other gramas. Other associated species, occurring mainly in protected areas and on north facing slopes, are juniper, snakeweed, sotol, creosote, Mormon tea, and barrel cactus.

Creosote is the dominant vegetation on the gravelly slopes that surround the mountain area. Other associated shrub species are mariola, mesquite, and snakeweed. Grasses include black grama, bush muhly, fluffgrass, tobosa, and other gramas.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

The majority of the Las Uvas Mountains WSA is a grass mountain habitat site. On northern slopes and in canyons, there are junipers and shrubs such as oak and Apacheplume. This variation in the vegetation allows for more diversity in the wildlife community than would otherwise be expected.

An abundance of rimrock along the mesas in the area provides raptor nest sites and habitat for other rock-dwelling wildlife. Golden eagles are common. Other common species dependent on this habitat are banded rock rattlesnakes and rock squirrels.

There are good populations of both scaled and Gambel's quail (BLM IHICS Data 1979). A resident mule deer herd is found in the Las Uvas Mountains, but the New Mexico Department of Game and Fish only estimates their numbers at one-half deer per section. The optimum numbers, according to the same estimate, would be three deer per section.

F. Visual

The Las Uvas Mountains have a Class B (moderate) scenic quality rating. The Las Uvas Mountains are characterized by mesas, buttes, and canyons. Landforms tilt to the north and colors are typically light and dark brown. Vegetation colors are light browns and dark greens. Canyon bottoms support an array of prickly pear, other cacti, creosote, grasses, mesquite, yucca, and sotol. At higher elevations, juniper trees dot the landscape and contrast with surrounding grasses.

Portions of the WSA are in three Visual Resource Management (VRM) Classes as follows: Class II-5,849 acres, Class III-609 acres, and Class IV-4,609 acres.

G. Cultural

There are no known historic or prehistoric sites in the Las Uvas Mountains WSA; however, there has been no survey. Based on topography and water sources rather than verifiable archaeological surveys, this WSA has a low cultural resources potential.

H. Air

Generally, the quality of air within the Las Uvas Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the Las Uvas Mountains WSA. Oil and gas potential in the WSA does not appear to be favorable because of the extensive igneous activity and structural complexities associated with the Goodsight-Cedar Hills depression (BLM Minerals Resource Inventory 1981). The nearest exploration wells are the Porter No. 1 Rincon Federal, located about 7 miles northeast of the WSA, and the Cities Service No. 1 Government-Corralitos "A", about 7 miles southeast of the WSA. Both were dry holes but drill stem tests in the Cities Service No. 1 indicated fair to good reservoirs (Thomson and Bieherman 1975).

Within the Las Uvas Mountains, there are no known geothermal energy occurrences. The Radium Springs Known Geothermal Resource Area (KGRA) is located about 15 miles southeast of the WSA. The basaltic rocks of the Sierra de Las Uvas indicate less promising geothermal potential than rocks with a high silica content, such as rhyolite. However, because of the Sierra de Las Uvas' history of igneous activity and its position within the Rio Grande Rift, the occurrence of geothermal resources in the WSA is at least a possibility. The potential for geothermal energy is moderate.

2. Non-Energy Minerals

There are no known pits or quarries for common variety minerals, although some arroyo bottoms and terraces contain commercial deposits of sand and gravel. The Bell Top formation and Las Uvas basaltic andesite contain rocks suitable for use as decorative or building stone. The potential for development of the sand and gravel and stone is low. Higher quality and more accessible deposits occur elsewhere in the region.

Zeolite minerals occur in tuffs of the Bell Top formation in the Cedar Hills, about 10 miles southeast of the WSA (BLM 1981). The tuffs of the Bell Top formation in the Cedar Hills and the Sierra de Las Uvas may not be of the same composition, but their similar geologic history and proximity to each other indicate that the occurrence of zeolites is at least a possibility.

In addition, an Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) rated the WSA as having a high intermediate favorability rating for the occurrence of copper, lead, zinc, silver, and gold. This rating indicates that a number of geological characteristics are present that suggest the occurrence of these minerals.

B. Watershed

Water use within the Las Uvas Mountains WSA is primarily by livestock and wildlife. There are six dirt tanks inside the WSA that utilize surface runoff (see Chapter III, Livestock Grazing). Additionally, there is a water spreading system comprised of a series of small rock dikes within the northern part of the WSA.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Las Uvas Mountains WSA. Steep slopes on the east side make part of this WSA inaccessible to livestock grazing. Licensed grazing use on public land includes cattle and a few horses. The W. Cothorn allotment (3015) is under an implemented Allotment Management Plan (AMP).

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
J. Bustamante 3010	3,465	252	1,408	41%
Sierra Alta Ranch 3012	6,695	1,380	567	8%
W. Cothorn 3015	14,654	3,252	2,671	18%
Las Uvas Ranch 3031	17,289	3,089	6,421	37%
TOTAL			11,067	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Sierra Alta Ranch 3012	2 dirt tanks interior fence	T. 20 S., R. 3 W., Sec. 5 1/4 mile
W. Cothorn 3015	interior fence	3/4 mile
Las Uvas Ranch 3031	dirt tank dirt tank 2 dirt tanks interior fence	T. 20 S., R. 4 W., Sec. 23 T. 20 S., R. 4 W., Sec. 30 T. 20 S., R. 3 W., Sec. 8 1/2 mile

Boundary Fences:

Cothorn 3015 and Las Uvas Ranch 3031	2 miles
Cothorn 3015 and Sierra Alta Ranch 3012	1 1/4 miles
Las Uvas Ranch 3031 and Bustamante 3010	3 miles
Bustamante 3010 and Sierra Alta Ranch 3012	2 1/4 miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

Recreation activities in and around the Las Uvas Mountains WSA generally require motorized use. They are primarily rockhounding,

sightseeing, hunting, and off-road vehicle (ORV) use. Rockhounding for agate nodules occurs throughout the Las Uvas Mountains. Sightseeing is usually associated with ORV use. The White Gap Pass Road, which forms the southern boundary of the WSA, provides a particularly scenic and challenging route through the mountains. The Rustler Fire Trail road, cherry-stemmed into the eastern part of the WSA, provides a challenge for the ORV enthusiast and access for hunters.

The Las Uvas Management Framework Plan (MFP) (BLM 1976) provides general guidance for the management of the Las Uvas Mountain range in regards to recreation. The MFP states that the Las Uvas Mountains will be managed "in a manner which will perpetuate their relatively unintruded, remote, and scenic characteristics." All future developments are to be designed and constructed to avoid impairment of scenic and recreation values.

Primitive recreation opportunities are described in Chapter IV, Primitive and Unconfined Recreation.

E. Realty Actions

A temporary State Aid Withdrawal was located within the Las Uvas Mountains WSA. The State of New Mexico completed their land selection and the withdrawal was reviewed by the BLM. The withdrawal was revoked effective October 7, 1983.

The Village of Hatch presently has a right-of-way (ROW) for water facilities within the WSA. The site is not being used, and the Las Cruces District has initiated procedures to revoke the ROW before 1985.

F. Wildlife

There are no existing wildlife developments in the Las Uvas Mountains WSA, but a deer Habitat Management Plan is proposed for the entire mountain range in the Southern Rio Grande MFP (BLM 1981). New waters and vegetation treatments could be proposed in this plan.

G. Vegetative Products

An area of approximately 5,120 acres in the southeast part of the Las Uvas Mountains WSA, around Chivato Canyon, was identified in the Southern Rio Grande MFP (BLM 1981) as a potential vegetative collection and sale area for cacti, ocotillo, and yucca.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Las Uvas Mountains WSA generally appears natural. Human imprints affecting the naturalness of the WSA include dirt tanks, vehicle trails, and the cherry-stemmed Rustler Fire Trail road.

Six dirt tanks are within the WSA. The tanks are located on the southwest, south, east, and northeast edges of the WSA less than 1/4 mile from the boundary. All are accessible by vehicle trails.

The naturalness in the northeast and east parts of the WSA is moderately impacted where most of the dirt tanks are located. However, due to their locations on the edges of the WSA and topographic screening, the dirt tanks are substantially unnoticeable when considering the overall naturalness of the WSA. The fences also have an insignificant effect on naturalness because they are constructed of materials that generally blend in with the landscape.

The access road to Chivato Tank in T. 20 S., R. 3 W., Section 20, SE1/4, and the tank itself are within the cherry-stem that includes the Rustler Fire Trail. This part of the road and the Tank are located in the bottom of a canyon and do not greatly impact naturalness. The Rustler Fire Trail has a somewhat more significant impact on naturalness. The Trail was constructed by the BLM, using heavy machinery, in 1968. The Trail was maintained using heavy machinery in 1972-1974 by the BLM and is now maintained by the rancher. The Trail runs north up Chivato Canyon from Chivato Tank, climbing the steep face of a bluff. It fans out into three separate dead-end trails on top. There are approximately 4 miles of the trail cherry-stemmed in the WSA. The Trail is visually noticeable on top of the bluff and when looking north up Chivato Canyon from Chivato Tank. The Trail locally impacts naturalness but does not degrade the overall naturalness of the Las Uvas Mountains WSA.

b. Solitude

The Las Uvas Mountains WSA provides outstanding opportunities for solitude. The entire WSA contains rugged canyon and mesa type topography which provides plenty of opportunities to escape the sights and sounds of other visitors. The size and shape of the WSA and moderate vegetative screening provided by scattered juniper enhance these opportunities.

c. Primitive and Unconfined Recreation

The Las Uvas Mountains WSA provides opportunities for hiking, backpacking, and hunting. The area provides good opportunities for day hiking. The area is not large enough for an extended backpacking trip. Horseback riding is somewhat limited due to approximately 9 3/4 miles of grazing allotment boundary and interior pasture fences within the WSA.

The WSA does not offer a wide diversity of high quality primitive recreation opportunities.

2. Special Features

The Las Uvas Mountains WSA provides habitat for the night blooming cereus, a Bureau sensitive plant species proposed for Federal listing, and the southwestern barrel cactus, a plant species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation). These are ecological features of scientific value.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Las Uvas Mountains WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the specific vegetation types in the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	9,276
creosote	1,791

b. Distance from Population Centers

The Las Uvas Mountains WSA is approximately 2 hours driving time from El Paso, Texas; 1 hour from Las Cruces, New Mexico; 3 hours from Albuquerque, New Mexico; 5 hours from Tucson, Arizona; and 7 hours from Phoenix, Arizona.

B. Manageability

Two factors affect the capability of the Las Uvas Mountains WSA to be managed as wilderness: land status patterns and the cherry-stemmed Rustler Fire Trail.

The WSA is almost totally surrounded by state and private lands. There is a 40-acre private inholding in the north-central part of the WSA. In the northwest part of the WSA, the boundary is convoluted because of the land status patterns. As a result, the state land in T. 20 S., R. 4 W., Sections 12 and 13, is surrounded on three sides by the WSA and is near the center of the area. Nonwilderness or nonconforming uses on these surrounding nonpublic lands, especially in Sections 12 and 13, or on the private inholding, could negatively impact wilderness values within the WSA.

Continued vehicle use on the cherry-stemmed Rustler Fire Trail would create impacts on the naturalness and solitude in the southeast and east-central parts of the WSA. If the area is designated wilderness, signs and possibly barriers would have to be installed to prevent hunters and recreationists from driving off of the Trail.

Since these are not major manageability conflicts, the Las Uvas Mountains WSA could be managed to preserve its existing wilderness character.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Las Uvas Mountains unit during both the public comment periods on the New Mexico Wilderness Review Initial Inventory Decision (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980).

In the March 1980 WSA Proposals, the BLM proposed to drop this area. This recommendation was based on the number and location of imprints, vehicle trails and roads, and the convoluted configuration of the intensive inventory unit.

Numerous personal contacts made during the public review period and the analysis of public comments revealed controversy over the BLM's recommendation to drop the entire unit. The application of the road definition to the Rustler Fire Trail and the BLM's evaluation of wilderness characteristics in the west half of the unit were questioned. Comments indicated that an area of approximately 10,000 acres surrounding the Fire Trail should be a WSA.

The final WSA decision rested largely with the application of the road definition to the Rustler Fire Trail and a reevaluation of the Trail's effects on apparent naturalness and outstanding opportunities. Based on public comments and additional field checks, the BLM determined that the Rustler Fire Trail did not meet the road definition and that an area of 11,067 acres in the western part of the intensive inventory unit met the basic wilderness criteria. This area was designated the Las Uvas Mountains WSA in the November 1980 New Mexico Wilderness Study Area Decisions. The decision that the Rustler Fire Trail did not meet the road definition was subsequently appealed to the Interior Board of Land Appeals (IBLA) by Wilford Cothorn, the grazing permittee in the affected portion of the Las Uvas Mountains WSA.

The IBLA ruled on the appeal of the Rustler Fire Trail decision on September 8, 1983. The IBLA ruling indicated that based on the present state of the record, it was not possible to determine whether the Rustler Fire Trail was correctly found to be a vehicle way rather than a road. The case was remanded to BLM for reconsideration and preparation of a new decision more responsive to the appellant's allegations. After reevaluation of information provided by the appellant, BLM employees, and BLM records, it was determined that the Rustler Fire Trail is a road as defined in the Wilderness Inventory Handbook (BLM 1978) and Organic Act Directive 78-61, Change 2. The Rustler Fire Trail has, therefore, been cherry-stemmed out of the designated Las Uvas Mountains WSA.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), 17 personal letters were received on the Las Uvas Mountains WSA. Comments in the ten letters favoring wilderness designation generally related to wilderness values, supplemental values, size, manageability, and resource conflicts.

Many of the inputs listed basic wilderness values and supplemental values, such as diverse communities of plants and animals, as reasons for supporting wilderness designation of the WSA. No discussion of the quality

of the area's wilderness values, the nature or significance of the diverse plant and animal communities values, or the degree to which these values would enhance the area's suitability for wilderness designation was included with the comments.

Two comments favored designation of the entire area (11,067 acres) while another comment indicated support for designation of an area of 15,000 acres. There was no discussion of boundary adjustments and no map to indicate location of the additional acreage.

Manageability comments included expressions of disagreement with the use of manageability conflicts to support a nonwilderness recommendation and the general statement that the area is manageable. Comments also suggested that eliminating off-road vehicle (ORV) access and land exchanges with the state would enhance manageability.

Other comments stated that resource conflicts are not significant, wilderness is not something to be designated when there are no other potential uses, and the area should be wilderness regardless of pressure from ORV users.

Additional comments supporting wilderness designation noted that the Las Uvas Mountains WSA is close to urban population centers and offers easy access. This type of information will be analyzed in the BLM New Mexico Statewide Environmental Impact Statement. Opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers will be one of three factors analyzed to determine how an area would add diversity to the National Wilderness Preservation System.

Seven personal letters were received that indicated opposition to wilderness designation for the Las Uvas Mountains WSA. Two of the letters gave no reasons and one specifically agreed with the Draft Environmental Assessment's Recommended Action of No Action/No Wilderness. Comments submitted by the minerals industry opposed wilderness designation because the area has potential for zeolites and because "oil, gas, and geothermal occurrences within the WSA are probable due to the existence of these types of exploration wells located northeast and southeast of the WSA." These statements are basically a reiteration of information presented in Chapter III, Minerals Development.

Additional information submitted by the minerals industry regarding mineral potential in the Las Uvas Mountains WSA has been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 11,067 acres of public land within the Las Uvas Mountains WSA would be recommended suitable for wilderness designation. (See Map 10 for location of the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, there would be significant impacts on wilderness values because of the added protection of Congressional designation. The impacts on nonprimitive types of recreation, cultural resources, air, and realty actions were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

It is assumed that exploration and leasing for energy minerals would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential of the area or for production and development. However, because the WSA is fairly small and potential appears to be low, impacts and loss of economic benefits to the energy minerals industry would be insignificant.

Locatable minerals may be impacted if zeolites, copper, lead, zinc, silver, or gold occur in the WSA. It is assumed that prospecting, exploration, and location of mining claims would not be allowed after wilderness designation, so there would be no opportunity for further assessment of the area's mineral potential. However, since there is currently no known prospecting activities and no mining claims have been located in the area, it appears that wilderness designation would have insignificant impacts on mineral resources at the present time.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Motorized access on vehicle trails within the WSA would not be allowed which could slightly decrease soil loss. Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element. However, since no major surface disturbing activities are proposed in existing BLM plans, the impact of the added protection as a result of wilderness designation would not be significant.

b. Wildlife

Since surface disturbing activities would be limited, wildlife habitat would be protected from this type of degradation. Wildlife would also be protected from harassment and disturbance. This would be most important for nesting raptors. The impacts would be insignificant since little surface disturbing activity is anticipated under nonwilderness management. Habitat manipulations might be proposed in the deer Habitat Management Plan (HMP). This could impact deer habitat, but the Las Uvas Mountains deer herd is not highly significant and most of the Las Uvas Mountain range is outside the WSA. Most proposed wildlife projects could be accommodated outside the WSA. The overall impacts to wildlife would not be significant.

c. Visual

Existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity. The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be authorized. However, if there were no practical alternatives, permits for vehicular access could be authorized for maintenance of the following rangeland developments: 2 dirt tanks on Sierra Alta (3012), 4 dirt tanks on Las Uvas (3031), and 1/4 mile of boundary fence between Bustamante (3010) and Sierra Alta (3012). Permittees on the Las Uvas (3031) and Bustamante (3010) allotments would not be allowed to use motor vehicles to check cattle on approximately 7 miles of existing vehicle trails. Checking livestock on foot or horseback could result in less effective livestock management due to the inconvenience and time requirements and could impact costs depending on the use normally made of vehicle trails. Overall, there would not be significant impacts to any one livestock operator.

e. Vegetative Products

The collection and sale of vegetative products on 5,120 acres in the southeast part of the WSA would not be authorized. The impacts would not be significant since these products would be available from other sale areas in the Resource Area.

f. Wilderness Values

Wilderness designation would provide the existing wilderness values in the area with significant long-term Congressional protection. The area would be specifically managed to maintain the existing basic wilderness values.

Two factors could slightly impact the capability of the Las Uvas Mountains WSA to be managed as wilderness. The sights and sounds of nonwilderness uses on the non-Federal lands that almost totally surround

the Las Uvas Mountains WSA could degrade natural values and opportunities for solitude. The impacts could be minimal to major depending on the type and extent of activity occurring and the location and type of access. Continued vehicle use on the Rustler Fire Trail would impact the naturalness and opportunities for solitude in the vicinity of the Trail.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 11,067 acres of public land in the Las Uvas Mountains WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses as described in Chapter III could be implemented.

Under the No Action/No Wilderness Alternative, there could be significant impacts to wilderness values in the long-term. The impacts on cultural resources, air, realty actions, vegetative products, and nonprimitive types of recreation were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

Under the No Action/No Wilderness Alternative, the wilderness values and special features of the Las Uvas Mountains WSA would not be provided with long-term Congressional protection. Since existing and proposed BLM plans do not identify any activities which would impair wilderness values, the entire area would probably retain its natural character in the short-term. However, management of the area as specified in land use plans would be subject to administrative change and the impacts to wilderness values could be significant in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

A slight increase in soil loss and sediment load could result from continued motorized access in the WSA. Increased sediment would contribute to a shortened usefulness or increased maintenance costs of the existing dirt tanks in several ephemeral drainages. The overall impacts to water, soils, and vegetation would be insignificant under this alternative.

b. Wildlife

Habitat manipulations proposed in the deer HMP could be implemented. Continued vehicular access could disturb some animals. However, the overall impacts to wildlife under this alternative would not be significant.

c. Visual

Under this alternative, approximately 5,849 acres in the north and central parts of the area would be managed as a VRM Class II. In a VRM Class II area, minor to moderate changes in the basic elements of the

landscape as a result of management actions would be permitted as long as the changes do not attract attention. Approximately 609 acres in the northwest part of the WSA would be managed as a VRM Class III. In a VRM Class III area, moderate changes in the landscape as a result of management actions would be allowed as long as the visual contrast is subordinate to the existing landscape. In the VRM Class IV area of approximately 4,609 acres in the south part of the WSA, significant changes in the basic elements of the landscape as a result of management activities would be permitted.

Since existing and proposed BLM plans do not identify any activities which would impair visual resources, the existing Class B scenic quality would probably be substantially maintained in the short-term. Although the VRM classes III and IV could allow degradation of the existing visual resources, based on present predictions of future uses and activities in the area, impacts to visual resources would not be significant.

d. Minerals

There would be no impact to leasable or locatable minerals. The minerals industry would need only to comply with the Surface Management Regulations (43 CFR 3809). Mineral exploration and development would be regulated to prevent unnecessary and undue degradation to the land. No economic benefits would be forgone under this alternative.

e. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. There would be no impacts to livestock grazing.

APPENDIX K

ORGAN MOUNTAINS WSA (NM-030-074)

I. GENERAL DESCRIPTION

A. Location

The Organ Mountains Wilderness Study Area (WSA) lies in eastern Dona Ana County, approximately 15 miles east-northeast of Las Cruces, New Mexico.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Organ and Organ Peak, New Mexico quadrangles. Both of these maps are at the 7 1/2-minute scale.

B. Climate and Topography

The Organ Mountain WSA is characterized by a semiarid, continental climate. Significant differences in climatic conditions are associated with changes in elevation and exposure.

Average annual precipitation in the area, above 6,000 feet, is close to 16 inches, nearly double the total in the valley. Maximum precipitation occurs in the summer in both the mountains and the valley, primarily from convective thundershowers. A slight secondary maximum occurs in the winter with some light snowfall common at higher elevations.

During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. Average monthly maximum temperature during July at higher elevations is in the mid 80's. In January, the coldest month, average monthly minimum temperature is in the low 20's. Temperatures vary markedly depending on exposure, with the northeast aspect being considerably cooler.

Wind speeds are usually moderate, although relatively strong winds often accompany frontal activities and thundershowers. Spring is the windy season and gusty winds may exceed 30 mph in the afternoons. Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography.

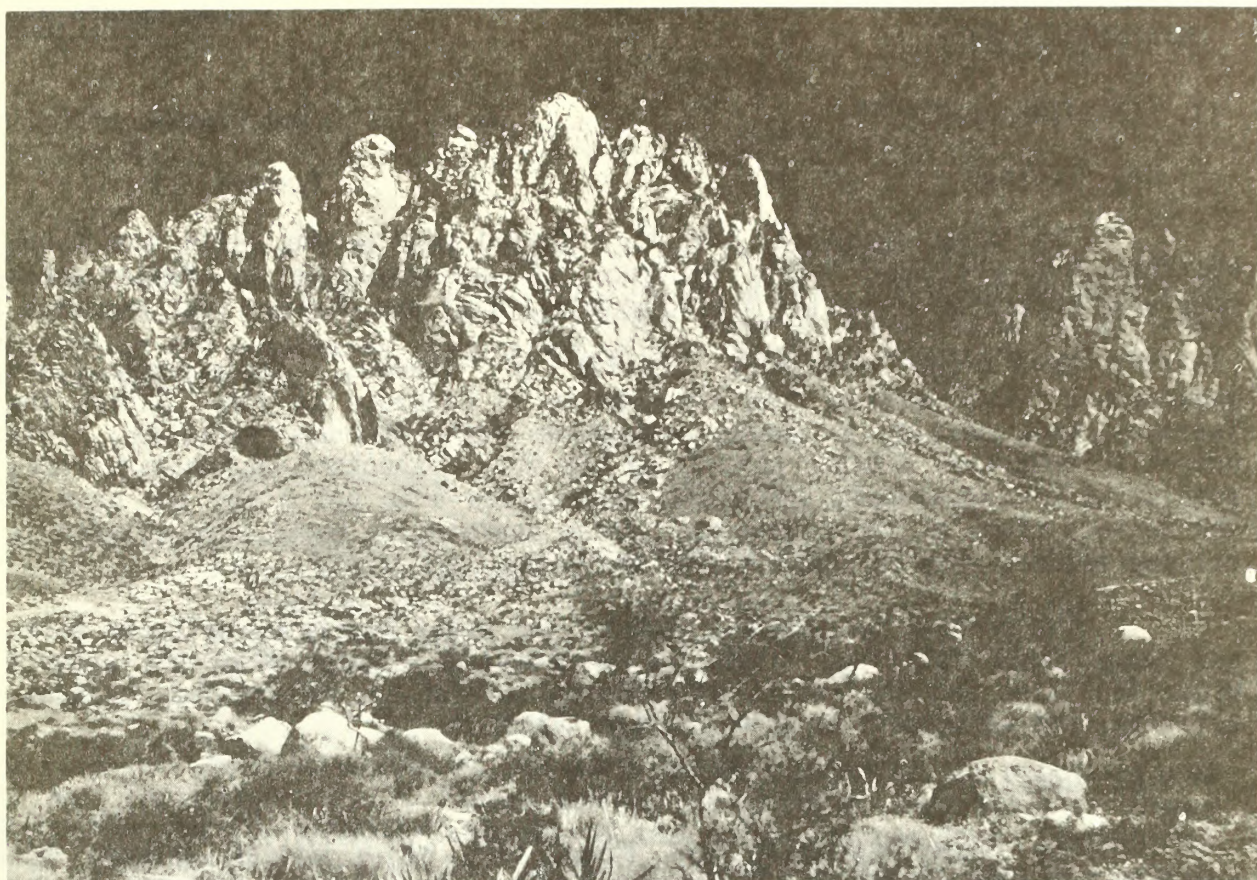
The Organ Mountains are a north-south trending mountain range characterized by extremely rugged terrain with a multitude of steep-sided crevices, canyons, and spires. The spires are the most striking features of the Organ Mountains. At a distance, they resemble the giant pipes of a stupendous organ. Elevations within the WSA range from about 5,000 feet along the pediments up to 8,010 feet. The towering and precipitous mountain mass of the Organ Mountains is bound by pediments that are covered with extensive block and boulder laden alluvial cone-fans. These pediments and fans are variably incised by water courses headcutting into the mountains.

C. Land Status

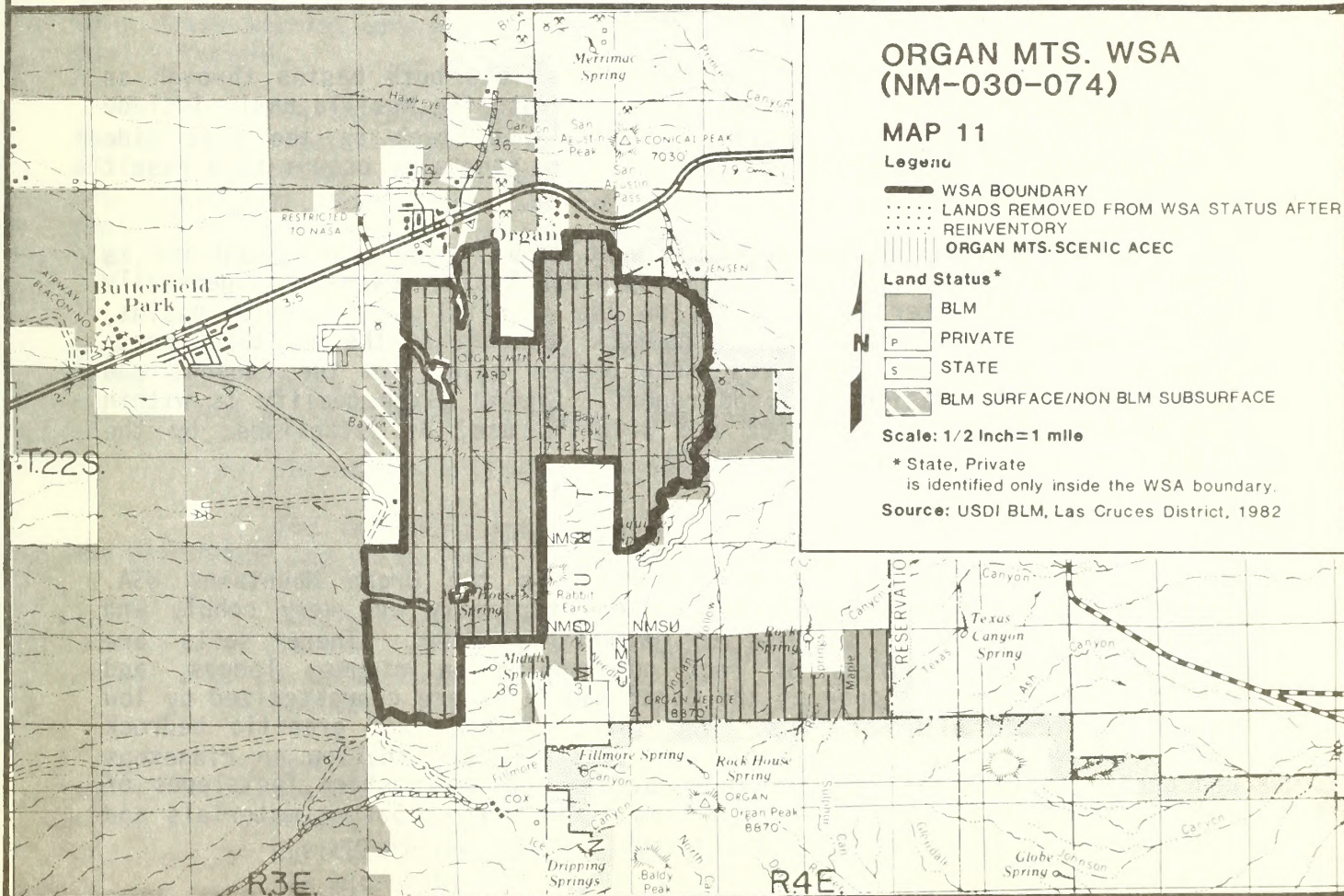
The Organ Mountains WSA contains 7,144 acres of public land. There are 40 acres of private land (a patented mining claim) within the boundary of the WSA. (See Map 11 for land status.)

D. Access

Legal access to the Organ Mountains WSA is available along the east and west boundaries. The Aguirre Spring Campground access road, which forms most of the eastern boundary of the WSA, is a paved BLM road running south off of U.S. Highway 70, about 3 1/2 miles east of Organ. On the west side of the WSA, the BLM's West Side access road runs south from U.S. Highway 70, about 1 mile west of Organ and forms part of the WSA's western boundary.



The Rabbit Ears near Mine House Spring.



II. EXISTING RESOURCES

A. Geology

The Organ Mountains WSA is situated within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake deposits.

The Organ Mountains consist of igneous, sedimentary, and metamorphic rocks ranging from Precambrian to Cenozoic in age. During the Tertiary time period, a quartz monzonite batholith was emplaced. This batholith comprises a major portion of the WSA. Paleozoic sedimentary rocks consisting of limestones, dolomites, and shales crop out along the base of the western slope of the mountains. These sedimentary rocks were altered to varying degrees when in contact with the batholithic rocks.

The present topographic form of the Organ Mountains reflects Basin and Range block faulting. There is evidence to suggest that the present Organ Mountains are the result of cauldron subsidence, resurgence, tectonic activity, and subsequent erosion (Seager 1975).

B. Water

The Organ Mountains WSA forms part of a divide between the southern Tularosa Basin and the Mesilla Basin. The Tularosa drainage is one of several closed basins within central New Mexico. The Mesilla Basin contributes to the larger Rio Grande Basin.

Surface water within the WSA drains into both basins through an ephemeral stream system. Principal drainages into the Mesilla Basin include Blair and Baylor Canyons. Tributaries to Anvil Creek on the east side contribute to the Tularosa Basin. Surface flow generally occurs as a result of summer thundershowers.

Ground water movement on the west side of the Organ Mountains is towards the Rio Grande Valley. In the Tularosa Basin, movement is generally eastward. Ground water is available on the alluvial fans in both basins, but the material thins to a shallow bedrock adjacent to the mountain front. Recharge to the ground water reservoir occurs mainly in the canyons and arroyos from infiltration of flood runoff. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Three major soil types occur within the Organ Mountains WSA. Soils on steep slopes at higher elevations typically are very cobbly and stony and range from shallow to moderately deep. These soils are interspersed between areas of rock outcropping on ridges, ledges, and cliffs. The east footslopes of the Organ Mountains are characterized by low ridges and broad alluvial fans. The soils, formed from granitic bedrock types, are very gravelly to cobbly and typically are shallow on ridgetops and deeper on the less sloping stable areas. On the western footslopes of the mountains, the soils are formed from mixed igneous parent materials and typically have a gravelly surface and cobbly subsurface layer.

D. Vegetation

1. General

Three life zones occur in the Organ Mountains. They consist of the Transition Zone from 7,000 feet to the peaks, the Upper Sonoran from 4,500 feet to 8,000 feet, and the Lower Sonoran below 5,000 feet. The vegetation and associated range sites within the Organ Mountains WSA consist of four major types:

Vegetation Type	Range Site	Federal Acres
Ponderosa pine	Mountain tops	163
Pinyon-juniper-mixed mountain shrub	Mountains	3,362
Mixed desert shrub	Gravelly loam	3,501
Mixed desert shrub	Sandy	118

Ponderosa pine is the dominant vegetation on the mountain tops in the Transition Zone. Pinyon-juniper trees occur at slightly lower elevations and in protected canyons in the Upper Sonoran Zone. Associated shrub species are diverse and varied. Shrubs on these mountain slopes include mountain mahogany, snakeweed, Mormon tea, oak, sotol, Apacheplume, sumac, tarbush, spicebush, creosote, mesquite, mariola, mimosa, and acacia. Many grass species are present in small quantities. Grama grasses are the most prevalent.

In the Lower Sonoran Life Zone, mixed desert shrub species are the dominant vegetation on the gravelly loam areas on slopes around the base of the mountains. These species include snakeweed, mimosa, mesquite, creosote, cacti, Mormon tea, and sotol. Many other shrub species occur in small quantities. Major grass species present are black grama, silver bluestem, tobosa, and other gramas.

Mixed desert shrub sandy areas spread out into the flats on both sides of the mountain range. Major shrub species include snakeweed, Mormon tea, yucca, mesquite, creosote, and Apacheplume. Grass species include bush muhly, tobosa, threeawns, and gramas in small quantities.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Aletes filifolius

Status: Selected by the New Mexico State Heritage Program as a state sensitive species.

Habitat: Occurs on rocky canyon slopes, 6,200-7,300 feet.

Species: Cereus greggii - night blooming cereus

Status: Selected as a Bureau sensitive species proposed for Federal listing.

Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Coryphantha organensis - Organ Mountain coryphantha
 Status: Selected by the New Mexico State Heritage Program as a special concern element.
 Habitat: Canyons and west facing slopes in the Organ Mountains.

Species: Ferocactus wislizenii - southwestern barrel cactus
 Status: Selected by New Mexico State Heritage Program as a special concern element.
 Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet.
 Disappearing rapidly due to over collection.

Species: Oenothera organensis - Organ Mountain primrose
 Status: Selected as a Bureau sensitive species proposed for Federal listing.
 Habitat: Grows around spring areas; restricted to the Organ Mountains.

Species: Perityle cerna - rock daisy
 Status: Selected as a Bureau sensitive species proposed for Federal listing.
 Habitat: Grows on vertical cliffs with little or no direct sunlight.

Species: Scrophularia laevis - smooth figwort
 Status: Selected by the New Mexico State Heritage Program as a special concern element.
 Habitat: Occurs on the highest peaks.

Species: Sicyos glaber
 Status: Selected by the New Mexico State Heritage Program as a special concern element.
 Habitat: Occurs in rocky soils on west facing slopes at approximately 6,000 feet.

E. Wildlife

1. General

Within the Organ Mountains WSA, there are great elevational differences (5,000 feet to 8,010 feet). Because of this, there is quite a variation in vegetation. Three life zones are found in the WSA.

About half of the WSA has been mapped as mixed shrub desert (41 percent) and creosote (9 percent). These habitat sites are within the Lower Sonoran Life Zone. The Upper Sonoran Zone is the mixed shrub mountain habitat site between 4,500 feet and 8,000 feet. Small pockets of ponderosa pine, representative of the Transition Zone, are found at the highest elevations.

The Organ Mountains have a varied wildlife community attributable largely to the elevation and vegetation differences. Several other factors also contribute.

Springs and seeps are well-distributed in the WSA. Some are seasonal, some yearlong. There is enough water for wildlife needs.

Much of the range is unvegetated cliffs which have a particular wildlife community associated with them. Golden eagles, prairie falcons, red-tailed hawks, and great horned owls nest in the cliffs, as do smaller birds such as canyon wrens and white-throated swifts, which are abundant in the WSA.

Certain mammals and reptiles are also associated with the rocky areas. Ringtails and rock rattlesnakes are typical rock-dwellers.

In the mixed shrub types, mule deer are common. The New Mexico Department of Game and Fish (NMDGF) (1980) estimates that there are 13 deer per section and the optimum number is 36 deer per section.

Mountain lions are fairly common in the San Andres Mountains, just north of the WSA. It is likely that they are also found in the WSA.

2. Threatened or Endangered Fauna Species

A state-listed endangered species, the Trans-Pecos rat snake has been collected in the Organ Mountains. It is often found in rocky, shrub-covered areas. It is threatened because of over-collecting.

Desert bighorn sheep, another state-listed endangered species, may be in the Organ Mountains. There are many reports from the military land south of the WSA, although none have been confirmed by NMDGF. When the San Andres herd was larger (pre-scabies outbreak), rams sometimes wandered south at least to San Augustin Peak and probably past Highway 70 into the WSA (Sandoval 1982).

Four molluscs, three species of Ashmunella and one of Sonorella, are endemic to the Organ Mountains. These molluscs are usually found in leaf litter and beneath rock talus under cliffs. Although at present there are no known threats to these snails and there have been no documented population declines, they are very restricted in distribution and little is known of them. The New Mexico Heritage Program lists these animals as elements of concern.

The U.S. Fish and Wildlife Service (FWS) returned a threatened and endangered species list request for the Organ Mountains WSA showing the peregrine falcon. However, this species was never observed during BLM's wildlife inventory (1977-1978). Fort Bliss (1980) surveyed the military portions of the Organ Mountains for peregrines and concluded that there were none nesting. The FWS (Carley 1982) stated that they knew of no eyries, but that the location and habitat is such that peregrines might nest there in the future, and migrating birds probably stop over.

F. Visual

The Organ Mountains form the eastern backdrop for the city of Las Cruces, the second largest urban area in New Mexico. The mountains are one of the most unique and spectacular topographic features in the region and visually dominate the landscape within a 25 to 30 mile radius.

Three scenic quality rating units describe the Organ Mountains WSA. The central part of the WSA, composed of the peaks and lower elevations of the mountains, has a Class A (high) rating. The higher elevations are characterized by steep, angular, barren rock outcroppings with massive, jagged, vertical intrusions dominating the highest peaks. More rounded peaks are less predominant but add interest to the strong ridgeline/sky interface. Moderately sloping rounded and boulder strewn hills characterize the lower elevations. Muted gray green and light browns are representative colors in the lower elevations while granitic gray to light pinkish gray typify the high pinnacles. The form and color of the vegetation is diverse. Low shrubs and grasses of light brownish green are the dominant ground cover. As the elevation increases, the vegetation changes from patches of yucca to juniper to oak to ponderosa pine, all of a dark green color. Streams flow intermittently and snow cover at the highest elevations is not uncommon during the winter months, particularly on the east-facing slopes.

The northeast part of the WSA has a Class B or moderate rating. This part of the WSA is characterized by low hills with rounded slopes and scattered boulders in light brown or tan. Light brown grasses and low shrubs are prevalent with occasional dark green small trees.

The southwest part of the WSA has a Class C or low rating. This area is a flat to gently rolling alluvial plain. Coloration is typically light reddish brown. Vegetation is primarily grasses and low shrubs in muted greens and light browns.

The WSA is within a Visual Resource Management Class II area.

G. Cultural

There are no known cultural sites within the Organ Mountains WSA, although several are located along its perimeter. While there has been no formal survey of the area, it has received more visitation than most of the other WSAs combined. Any large, obvious prehistoric sites probably would have been reported by now.

There are historic reports of Apaches in the area. The main historic use of the area was for mining from 1849 to 1900. The WSA was the scene of the first action of the Civil War in New Mexico as Confederate forces used the present Baylor Pass Trail to outflank Union forces; however, nothing remains of this event now. While there are no major sites in the area, the history contributes to the supplemental values of the area.

H. Air

Generally, the quality of air within the Organ Mountains WSA is good. The air quality in the WSA does not exceed state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

Activities within the Rio Grande Valley, located approximately 10 miles west of the WSA, could slightly lower the air quality, but the change probably would not be noticeable, nor would it lower the present Class II rating of air quality in the WSA.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are presently no known occurrences of energy minerals within the WSA. One oil and gas lease application has been filed on parcels located within the boundary of the WSA.

Potential is very low in the Organ Mountains WSA. Petroleum accumulations are not likely because associated faults and igneous activity are not conducive to hydrocarbon accumulations. Geothermal energy is not favorable because of a lack of geothermal indicators and the old age of the basement rock.

Most of the area within the WSA is covered by special stipulations for energy minerals leasing (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983). The Baylor Recreation Area and part of the Organ Mountains Recreation Area are within the WSA. These areas are Not Open to Leasing. All but 473.49 acres of the Organ Mountains WSA is within the Organ Mountains Recreation Lands (OMRLs). Energy mineral leases let within the OMRLs would be covered by a protective stipulation for recreation values. Much of the WSA has also been identified as having special wildlife values which are also protected by a special stipulation.

2. Non-Energy Minerals

There are currently no active mines in the WSA. Small reserves of ore are known to exist at several places and geologic relationships are favorable for ore deposits at many other places. Gold, silver, copper, lead, zinc, and fluorspar have been produced from deposits in the general area in the past. All of these minerals except gold are on the National Defense Stockpile Inventory of Strategic and Critical Minerals. There are approximately 85 mining claims recorded within the WSA. These claims are both pre- and post-Federal Land Policy and Management Act (FLPMA).

Geochemical data, alteration patterns, and geophysical data gathered during the McNulty project (1979) suggest that certain zones in the Organ Mountains WSA are favorable for mineral deposits. The most favorable area indicated for commercial mineral deposits is in the Paleozoic sedimentary rocks along the west side of the WSA. The Baylor Peak area is considered favorable, but less prospective. Most of the area underlain by intrusive rocks in the eastern part of the WSA appears less likely to contain commercial mineral deposits. The potential for strategic and critical mineral occurrence is high. Strong interest in the area is indicated by the number of claims and the amount of assessment work.

B. Watershed

Water use within the Organ Mountains WSA is primarily by livestock and wildlife. There are two dirt tanks inside the WSA that utilize surface runoff and four developed springs that provide seasonal water (see

Chapter III, Livestock Grazing). Additionally, several well facilities and dirt tanks are located just outside the WSA for livestock watering and limited domestic use.

The Organ Mountains WSA is within the Lower Rio Grande declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of five grazing allotments are within the Organ Mountains WSA. Livestock use in most of the Organ Mountain range is limited due to the steep slopes. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
A. B. Cox 5002	15,180	1,504	68	.4%
San Augustine Ranch 5003	4,897	624	2,428	50%
D. Hopkins 5006	1,340	275	1,012	76%
S. Walter 5012	1,180	168	439	37%
Baylor Canyon 5013	10,988	1,428	3,197	29%
TOTAL			7,144	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
San Augustine Ranch 5003	spring interior fence	T. 22 S., R. 4 E., Sec. 20 3/4 mile
D. Hopkins 5006	spring dirt tank	T. 22 S., R. 3 E., Sec. 13 T. 22 S., R. 3 E., Sec. 13
Baylor Canyon 5013	dirt tank and spring spring interior fence	T. 22 S., R. 3 E., Sec. 24 T. 22 S., R. 3 E., Sec. 26 2 3/4 miles

Boundary Fences:

Baylor Canyon 5013 and Hopkins 5006	1 mile
Hopkins 5006 and Walter 5012	1 1/2 miles
San Augustine Ranch 5003 and Walter 5012	3/4 mile
Cox 5002 and Baylor Canyon 5013	1 mile

Note: a/Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

Most of the Organ Mountains WSA is within the Organ Mountains Recreation Lands (OMRLs). The OMRLs were designated as Class II General Outdoor Recreation Lands in 1971. The Baylor Recreation Site and portions of the Organ Mountains Recreation Area are within the WSA. These areas were classified for recreational purposes under the Classification and Multiple Use Act and are segregated from all forms of mineral entry. The OMRLs are designated limited to existing roads and trails for off-road vehicle (ORV) use. No motorized cross-country travel is allowed.

The Aguirre Spring campground is a developed recreation site less than 1/4 mile from the southeast boundary of the WSA. The campground is on New Mexico State University land across which BLM has a perpetual easement for recreational purposes and developments. The campground has 55 picnic/camping units and firewood is provided. There are plans to provide water facilities at the campground in the future. There are approximately 80,000 visitors to the Aguirre Spring Campground annually.

Two National Recreation Trails are in the OMRLs. The Pine Tree National Recreation Trail is on New Mexico State University land adjacent to the WSA. The Baylor Pass National Recreation Trail bisects the WSA. In addition to hiking, horseback riding is allowed on the Baylor Pass Trail.

The Mesilla Valley Track Club sponsors the Baylor Pass Run which has been held every fall since 1971. Over 170 runners participated in the race across Baylor Pass in 1983.

Parking facilities are available at the Aguirre Spring campground, Baylor Pass trailhead, and San Augustin wayside on U.S. Highway 70 for access into the WSA.

Recreational activities in the Organ Mountains include bird hunting, rock collecting, picnicking, camping, hiking, rock climbing, horseback riding, and geological, botanical, and zoological sightseeing.

A special permit deer hunt was held in the Organ Mountains in the past. However, the Organ Mountains were closed to deer hunting in 1983. Bird hunting takes place along the slopes of the Organ Mountains in the northeast and southwest parts of the WSA.

Rock collecting in the Organ Mountains is excellent. Numerous rocks and minerals of gemstone quality are found along the base of the mountains.

Technical rockclimbing opportunities in the Organ Mountains are nationally significant. Climbing in the Organ Mountains is done on quartz monzonite, similar to the type of granite in Yosemite National Park. Most of the climbing opportunities are between Baylor Pass and the Organ Needle, and in the Sugarloaf area east of the WSA. The Southwest Mountaineers, a local group from Las Cruces, have 60 members with 30 or so who are avid

climbers. Groups of 20 or more persons climb in the Organ Mountains two or three times a month, while small groups of three to five get out on their own every week.

E. Education/Research

There is a potential in this area for geological studies. In the higher elevations, there is a possibility for dendrochronological studies of the ponderosa pine by the Tree Ring Laboratory of the University of Arizona in connection with climatic reconstruction work being done by Dr. Ferguson.

F. Realty Actions

There are sections of three power transmission lines that border the Organ Mountains WSA. On the north, Plains Electric Generation and Transmission Cooperative, Inc. has a right-of-way (ROW) for a 115kv transmission line. This ROW has recently been amended for route changes, but does not enter the WSA. El Paso Electric Company has ROWs for transmission lines along the northeast boundary of the WSA and along the road to the Stevenson-Bennett Mine, which is cherry-stemmed into the northwest part of the WSA.

Valley Transit Mix, Ltd. has a temporary use permit for approximately 10 acres of Federal land adjacent to the Stevenson-Bennett patented mine in T. 22 S., R. 3 E., Section 11, SW1/4 SE1/4. The company is removing the privately-owned road building and raw construction material that has been stockpiled in this area illegally or under temporary permit at least since 1974. The permit expires October 31, 1985.

G. Wildlife

There are no existing wildlife developments in the Organ Mountains WSA. However, a deer Habitat Management Plan is proposed in the Southern Rio Grande Management Framework Plan (MFP) (BLM 1981) for the Organ Mountains.

According to Andy Sandoval of the New Mexico Department of Game and Fish, survey work will be pursued for desert bighorn sheep. If bighorn sheep are found, more will probably be put into the Organ Mountains to supplement this native herd.

H. Visual

The Southern Rio Grande MFP (BLM 1981) contains a decision to designate the Organ Mountain Scenic Area (8,947 acres) as an Area of Critical Environmental Concern (ACEC) for visual resources. (See Map 11 for general location of the ACEC.)

The Organ Mountains meet the two criteria required for an area to be considered as a potential ACEC for scenic values: (1) the area rates high (Class A) in scenic quality and (2) the area has a rating of five for scarcity. Class A scenic quality ratings are assigned to areas that combine the most outstanding characteristics of each of the following seven rating factors: landform, vegetation, water, color, influence of adjacent scenery,

scarcity, and cultural modifications. The Organ Mountains were rated high for scarcity because they are recognized as an uncommon geologic formation within the Basin and Range Physiographic Province. The high visual sensitivity is further supported by the number of users. The Organ Mountains are viewed daily by a resident population in excess of 50,000 people. They are traversed by U.S. Highway 70 with an average annual daily traffic (AADT) volume of over 5,000 vehicles and paralleled by Interstate Highway 10 with an AADT of over 11,000 vehicles. Recreation use within designated areas exceeds 80,000 annual visits. A yet to be determined number of dispersed recreation users in the Organ Mountains will further increase the visitor use figure. The scenic resources of the Organ Mountains are also important in terms of people's perceptions and attitudes toward the management of that resource. As documented in the Southwestern New Mexico Socio-Economic Profile prepared by Harbridge House Inc. (October 1978), residents of Las Cruces share the attitude that the Organ Mountains should be preserved and protected, citing them as centers of recreational activity and a source of considerable civic pride.

The environmental impacts of designating the ACEC were analyzed in the Draft Las Cruces/Lordsburg Management Framework Plan Amendment/Environmental Impact Statement for energy minerals leasing, rangeland management, and ACECs. Approval of the plan (May 1984) constitutes formal designation of the Organ Mountains Scenic Area. If the Organ Mountains are designated wilderness, the ACEC designation would be cancelled without further planning action. The special management objectives of the ACEC would be to protect, prevent irreparable damage, and enhance the scenic values of the Organ Mountains. The special management requirements of the ACEC include retention of the existing closure to plant collection and sale, restriction of vehicle use to existing roads and trails, and retention of the existing segregation of approximately 1,479 acres from all forms of mineral entry (under the Classification and Multiple Use Act of 1964). Additional special management requirements include management of the ACEC as a VRM Class I and removal of the exposed gravel piles near the Stevenson-Bennett mine. The remaining 6,017 acres of the ACEC would be withdrawn from locatable and saleable mineral entry subject to valid existing rights. An additional 2,753 acres of Federal mineral estate on the north, east, and south boundaries of the ACEC would also be withdrawn from locatable and saleable mineral entry. A No Surface Occupancy stipulation would be attached to energy minerals leases. No new rights-of-way would be authorized. Cooperative agreements would be sought with the Regents of New Mexico State University and the State Land Office to ensure that management of University and state lands adjacent to the ACEC are managed as a VRM Class I.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The natural appearance of the Organ Mountains WSA is affected by a variety of the imprints of man: rangeland developments, access routes, historic mining activity, the outside sights of developments along the north boundary of the WSA, and the city of Las Cruces and White Sands military base. In most cases, the influence of these imprints is mitigated by vegetative and topographic screening and by their location in relation to the WSA's boundaries and other imprints.

The earthen dams along the west and east sides of the Organ Mountains are generally well camouflaged by vegetative and topographic screening and do not detract from the natural appearance of the WSA. Approximately 8 miles of barbed wire fence are within the WSA and on the boundary. Most have wooden posts which blend in with the landscape.

The naturalness of the WSA has been affected somewhat by the evidence of historic mining activity along the west face of the Organ Mountains. The road to Mine House Spring is cherry-stemmed out of the WSA. Past Mine House Spring, the route is unmaintained and provides access to the patented Ruby Mine that is inactive. The tailings piles, structures, and mine entrance are topographically screened from the rest of the WSA.

The Stevenson-Bennett Mine is located at the base of a ridge in the northwest part of the WSA. The road, power transmission line and right-of-way (ROW), and mine are cherry-stemmed out of the WSA. The large cut in the hillside is several hundred feet long. The mine cut and large piles of gravel next to the mine create a visual impact when viewing the area from the north and west, but the topography camouflages the mine and gravel piles from most of the WSA.

Imprints of man originating from outside the WSA do not significantly affect the overall natural appearance of the WSA, although developments in San Augustin Pass and the cities of Organ and Las Cruces, and the White Sands Missile Range can be seen from the WSA.

The developments in San Augustin Pass include evidence of mining activity, U.S. Highway 70, several hundred buildings, and two powerlines with double post structures 20 and 50 feet tall. These imprints negatively impact the northern part of the WSA but are screened topographically from most of the WSA, as is the town of Organ. Although the city of Las Cruces and the White Sands military base contrast with the natural appearance of the WSA, they are far enough removed that they do not dominate the view and should heighten public awareness and appreciation of the natural appearance of the Organ Mountains WSA.

The major topographic features of the WSA remain unaffected by the imprints of man. Rugged canyons and steep ridges have

restricted development to the gentler slopes along the eastern and western boundaries. The Organ Mountains WSA appears to have been affected primarily by the forces of nature and the imprint of man's work is substantially unnoticeable.

b. Solitude

The Organ Mountains WSA provides outstanding opportunities for solitude. The rugged topography of the mountain range bisecting the WSA creates numerous opportunities for solitude. Baylor Peak rises over 2,700 feet above the surrounding plains and half a dozen major ridges descend from the backbone of the range, with each breaking off into countless smaller ridges with drainages between each one. As a result, a great deal of topographic relief is present and topographic screening and opportunities for seclusion are offered in almost every drainage and on many ridges. Along the eastern and western boundaries, the terrain is less rugged; however, there is still a 10-20 degree slope and several small arroyos and ridges which offer a moderate amount of topographic screening.

Opportunities for solitude in the northern end of the WSA are slightly impacted by the sounds of traffic on U.S. Highway 70. Topographic features generally block the sound out of the drainages.

c. Recreation

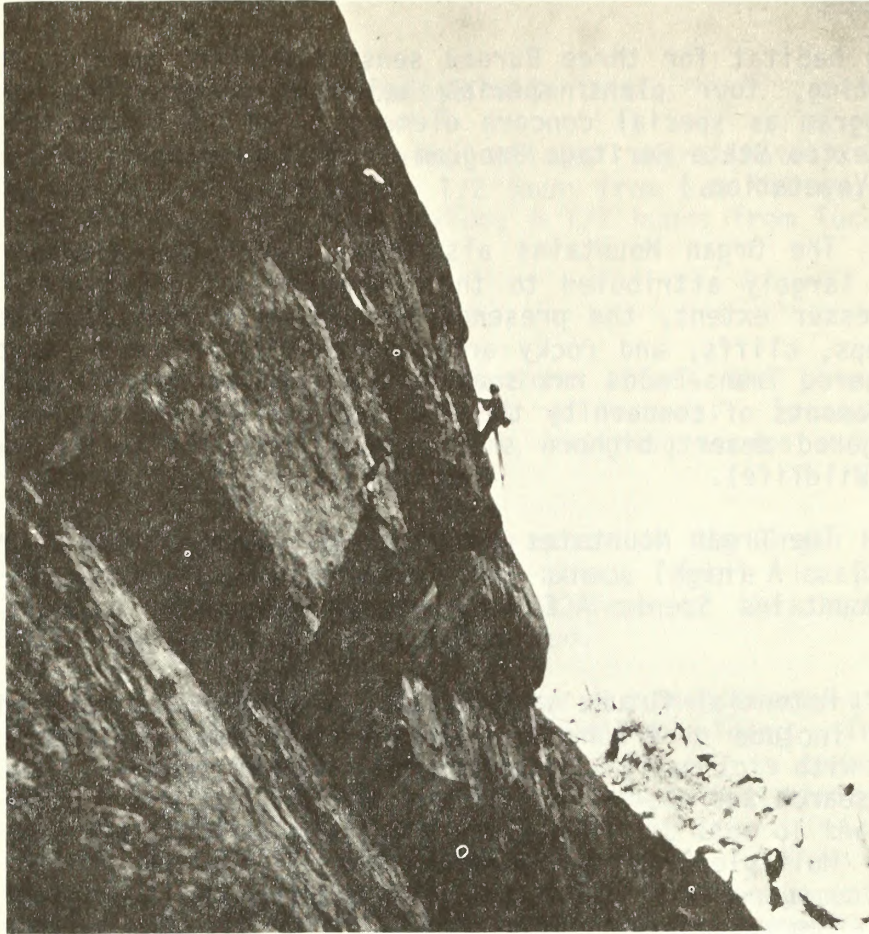
The Organ Mountains Recreation Lands (OMRLs) have been intensively managed for recreational purposes since 1971 and nonmotorized activities constitute the primary existing use within that part of the OMRLs included in the WSA. (See Chapter III, Recreation.)

Opportunities for primitive and unconfined types of recreation in the Organ Mountains WSA are enhanced by several factors: size and boundary configuration, topographic relief, opportunities for challenge and risk, vastness of scale, opportunities to use outdoor skills, the quality and diversity of the recreational resource and supplemental values.

The majority of the public land in the WSA is blocked up so that visitors may spend an afternoon or weekend hiking and exploring the WSA. In addition, New Mexico State University land south and east of the WSA are managed by the BLM for both developed and primitive types of recreation.

The topography of the Organ Mountains is so rugged and diverse that visitors traveling off trails have excellent opportunities for challenge and risk. The vastness of scale in the WSA is significant. Baylor Peak rises over 2,700 feet above the surrounding plains and the mountain range dominates the landscape for miles around.

The lack of recreational facilities within the WSA offers excellent opportunities to use outdoor skills and interact with a natural environment.



Climbers on the Citadel. (Photo courtesy of Paul Kemp)

A diversity of high quality recreational activities can be accommodated within the WSA. The rugged terrain offers outstanding opportunities for horseback riding and day hiking, and both individuals and groups often use the area for these purposes. Rockclimbing opportunities in the Organ Mountains are nationally significant and there are also several rock faces popular for rockclimbing in the southern half of the WSA. Opportunities for sightseeing geological features are excellent throughout the WSA and opportunities for sightseeing botanical features are present around Baylor Pass.

The Organ Mountains WSA offers outstanding opportunities for a primitive and unconfined type of recreation in terms of both quality and diversity of available opportunities.

2. Special Features

The Organ Mountains WSA contains special ecological and scenic features.

The ecological features include both vegetation and wildlife values of scientific and educational interest. Within the Organ Mountains, there are great elevational differences. As a result, three life zones occur in the area which accounts for the great diversity in vegetation. The

WSA provides habitat for three Bureau sensitive plant species proposed for Federal listing, four plant species selected by the New Mexico State Heritage Program as special concern elements, and one plant species chosen by the New Mexico State Heritage Program as a state sensitive species. (See Chapter II, Vegetation.)

The Organ Mountains also have a diverse wildlife community. This can be largely attributed to the elevation and vegetation differences and, to a lesser extent, the presence of special habitat features such as springs, seeps, cliffs, and rocky areas. The WSA provides habitat for the state endangered Trans-Pecos rat snake and four species of endemic molluscs listed as elements of concern by the New Mexico State Heritage Program. The state endangered desert bighorn sheep may also occur in the area. (See Chapter II, Wildlife).

The Organ Mountains WSA has outstanding scenic features. The area has a Class A (high) scenic quality rating. Most of the WSA is within the Organ Mountains Scenic ACEC for visual resources. (See Chapter II, Visual.)

Potential future projects of scientific and educational value in this WSA include dendrochronological studies of the ponderosa pine in connection with climatic reconstruction work. (See Chapter III, Education/Research.)

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Organ Mountains WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of juniper-pinyon woodland.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
western ponderosa forest	163
mountain mahogany oak scrub	3,362
Trans-Pecos shrub savanna	3,619

b. Distance from Population Centers

The Organ Mountains WSA is approximately 1 1/2 hours driving time from El Paso, Texas; 1/2 hour from Las Cruces, New Mexico; 4 1/2 hours from Albuquerque, New Mexico; 5 1/2 hours from Tucson, Arizona; and 7 1/2 hours from Phoenix, Arizona.

B. Manageability

Both positive and negative factors affect the potential of the Organ Mountains WSA to be managed as wilderness: locatable minerals potential, existing minerals segregations, existing access and recreational facilities, and visibility of boundaries.

Strategic minerals are known to occur in the Organ Mountains WSA and there has been production in the past. There is potential for commercial mineral deposits along the west face of the Organ Mountains. Several mines along the west side are patented.

The Stevenson-Bennett patented mine has been cherry-stemmed out of the WSA and the Ruby patented mine is a 40-acre inholding. In addition, a patented mine in T. 22 S., R. 3 E., Section 12, W1/2, is surrounded on the east and west sides by the WSA. Numerous unpatented mining claims are located around the patented mines and along the west face of the mountains.

There are both pre-Federal Land Policy and Management Act (FLPMA) and post-FLPMA unpatented mining claims within the Organ Mountains WSA. The presence of these claims affects the manageability of the WSA in two ways:

1. The FLPMA specifies that mining uses that existed on the date of approval of the Act may continue in the same manner and degree during the time that an area is under wilderness review. Such mining uses are grandfathered and may continue even if the uses would impair wilderness suitability.

In addition, mining claimants may be recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976, and the claimant can show BLM that the claim continues to be supported by such a discovery. Valid existing rights convey a more liberal development standard than grandfathered rights in that activities on valid claims are not limited to the same manner and degree. When it is determined that the valid existing rights can be exercised only through activities that will impair wilderness suitability, the activities will be regulated only to prevent unnecessary and undue degradation. If any of the pre-FLPMA claims in the Organ Mountains WSA which meet the above criteria are developed, wilderness values could be degraded before the area is designated wilderness.

2. Once an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in an area prior

to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations, "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, wilderness values could continue to be degraded after the area is designated wilderness.

The three patented mines are presently inactive and their impact upon manageability is insignificant. It is difficult to predict when or if the minerals in the Organ Mountains will be economically exploitable. However, reopening the patented mines and full-scale development of the mining claims would certainly degrade wilderness values.

Positive factors influencing the manageability of the Organ Mountains WSA include the approximately 1,479 acres of the WSA (T. 22 S., R. 3 E., parts of Sections 13, 14, 23, 24 and T. 22 S., R. 4 E., parts of Sections 6, 8, 17, 20) which have been segregated from mining and mineral leasing. Retention of this segregation (under the Classification and Multiple Use Act of 1964) would enhance efforts to preserve the wilderness character of the WSA since it is more restrictive than that portion of the 1964 Wilderness Act which allowed wilderness areas designated in 1964 to remain open for mineral leasing and mining claim location through December 31, 1983.

The manageability of the WSA is enhanced by the presence of approximately 2,089 acres (T. 22 S., R. 4 E., Sections 19, 29, 30, and part of 31) belonging to New Mexico State University (NMSU) that are contiguous to the south and southeast boundaries of the WSA (see Map 11 for land status). The NMSU lands are very rugged and densely vegetated with ponderosa pine, oak, and juniper. These lands are managed by the BLM for recreational purposes under a perpetual easement from the University and present administration enhances the manageability of the WSA. An additional area of approximately 1,760 acres of Federal land is contiguous to the NMSU land on the east. This area encompasses Sugarloaf Peak and Indian Hollow. This area is also very rugged, densely vegetated, and managed by the BLM primarily for recreation. Most of this area is segregated from mineral entry. In summary, the present administration by BLM on the approximately 3,849 acres adjacent to the southeast boundary of the WSA would enhance the wilderness manageability of the Organ Mountains WSA.

The WSA is accessible from several roads. The Aguirre Spring Road and West Side access road constitutes the eastern and western boundaries of the WSA, and U.S. Highway 70 lies a half-mile to the north. Recreational facilities at the Aguirre Spring campground attract high levels of use, some of which spills over into the WSA. Parking facilities are available at the Aguirre Spring campground, on the West Side road at the Baylor Pass Trailhead (T. 22 S., R. 3 E., Section 14), and at the San Augustin wayside on U.S. Highway 70 (T. 22 S., R. 4 E., Section 6). No further access is necessary as visitors may enter and traverse the WSA without leaving land administered by the BLM.

The roads to the Stevenson-Bennett Mine and Mine House Spring have been cherry-stemmed out of the WSA. The gate on the road to the Stevenson-Bennett Mine is usually locked and the road to Mine House Spring requires a four-wheel drive vehicle. These roads may cause manageability problems by allowing vehicular access into the WSA.

On-the-ground management of the WSA would be enhanced by the visibility of its boundaries. The eastern and western boundaries of the WSA are for the most part alongside Government maintained roads, while portions of the northern boundary lie along a powerline. Part of the southern boundary lies along a dirt road while the southeastern portion of the WSA borders the NMSU recreation lands. Since physical boundaries would be easier to identify than "invisible" legal lines, conflicts resulting from unintentional trespass by wilderness visitors onto private land or by unauthorized uses into the wilderness area should be minimal.

Approximately 474 acres of private land (south of the power transmission line in T. 22 S., R. 3 E., Section 1, SE1/4, Section 12, E1/2, and T. 22 S., R. 4 E., Section 6, SW1/4) and 520 acres of state land (in T. 22 S., R. 3 E., Section 36) should have a high priority for acquisition if the area is designated wilderness. The private and state lands are contiguous to the north and south boundaries of the WSA, respectively, and would enhance the manageability of the area as wilderness. The acquisition would also enhance the topographic integrity of the area and eliminate the potential for impacts on wilderness values as a result of nonwilderness uses on the non-Federal lands.

The Organ Mountains WSA could be managed in the long-term to preserve existing wilderness values. The WSA is within the Organ Mountains Recreation Lands which are managed primarily for recreation, portions of the WSA are already segregated from mineral entry, the area is accessible, and its boundaries easily identifiable on the ground.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Organ Mountains unit during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). Maps were included with the comments.

Approximately 71 percent of the personal letters favored wilderness review of the area. Supporting reasons listed lack of roads, few imprints of civilization, excellent recreation and solitude, interesting terrain, and the supplemental values of endangered species as justification for further wilderness study. Other comments pointed out that wilderness areas near population centers are needed and that the Organ Mountains need protection.

Approximately 29 percent of the personal letters opposed wilderness review of the area. Imprints of man's activities, lack of outstanding opportunities for solitude or primitive recreation, presence of roads, and mining conflicts were given as reasons for opposing further wilderness review.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in Las Cruces District (BLM 1983), 26 personal letters and 17 form letters were received indicating support for wilderness designation of the Organ Mountains WSA. Nine personal letters opposing wilderness designation were submitted.

Five of the personal letters in favor of wilderness for the Organ Mountains listed no supporting reasons. Most of the specific comments favoring wilderness designation in both the personal and form letters reiterated BLM's rationale for recommending the Organ Mountains WSA suitable. Major supporting reasons included high quality wilderness values, scenic values, diverse wildlife habitat and plant communities, potential desert bighorn sheep habitat, and scientific and educational values. The New Mexico Natural History Institute, whose primary interest is in building a system of natural areas for New Mexico, indicated full support for wilderness designation of the Organ Mountains, adding, "This is a very important area in state natural area planning because of rare species and other characteristics well discussed in the DEA."

Comments on the potential manageability of the area included: good access, boundary configuration, contiguous New Mexico State University lands enhance manageability, and acquisition of adjacent private land should have a high priority. Pro-wilderness comments regarding resource conflicts generally supported BLM's judgment that the wilderness values of the Organ Mountains are more important than mineral values.

A number of comments asserted that the Organ Mountains WSA should be designated wilderness because of its proximity to Las Cruces and other urban areas and that preservation of the area will become more significant as these areas grow. This type of information will be analyzed in the BLM New Mexico Statewide Wilderness Environmental Impact Statement. Opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers will be one of three factors analyzed to

determine how an area would add diversity to the National Wilderness Preservation System.

Comments on the No Action (ACEC) Alternative varied. A number of comments indicated support for both wilderness and the Organ Mountains Scenic ACEC, stating that the two designations would offer the best protection from mining activities. The New Mexico State Heritage Program suggested that an ACEC to protect the endemic molluscs in the Organ Mountains might be appropriate in lieu of wilderness designation. The State Department of Agriculture stated, "It is our opinion that the special designation as an ACEC would be adequate in protecting the outstanding qualities of both areas without completely removing the availability of certain range improvement techniques which would enhance the resources ... we recommend the No Action Alternative"

Comments in the nine personal letters opposing wilderness designation of the Organ Mountains WSA primarily focused on the mineral potential of the area. These comments included the following reasons: strategic minerals are known to occur in the WSA; there has been mineral production in the past; and the number of claims and assessment work in the area is evidence of the strong interest in the mineral potential of the Organ Mountains. Other comments observed; "The fact that the area had to be cut up with cherry-stems to exclude some patented mining claims and a large area left in the center for the same reason, should make the mineral potential obvious", and "In these times of depressed economic activity, ... area cannot be profitably mined, ... doesn't mean that this condition will last forever." Another comment stated that the area of mineral potential in the Organ Mountains "is well below the beautiful peaks of the Organs and will in no way adversely affect them or disturb their beauty."

Detailed information on proven and indicated reserves of ore and the grade of fluorspar at the Ruby Mine and associated unpatented claims was submitted, as well as a list of uses for fluorspar and a copy of a letter to the BLM Director nominating the Organ Mountains as an Area of Critical Mineral Potential. Information regarding the Modoc Mine, which is south of the WSA, and two geological reports (Dunham 1935, reprinted 1980; Seager, 1980) were also submitted.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 7,144 acres of public land within the Organ Mountains WSA would be recommended suitable for wilderness designation. (See Map 11 for location of the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the BLM's Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, development work, extraction, and patenting of mining claims existing in the Organ Mountains WSA as of the date of designation would be allowed if the claims are determined to be valid. A mineral examination and subsequent mineral report must confirm that as of the date of designation, minerals had been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success in developing a valuable mine. Undue and unnecessary degradation of wilderness character would not be allowed, and the use of mechanical and motorized equipment would be authorized only if there are no reasonable alternatives. Plans of Operation for mining on valid existing claims would include reclamation measures to provide for restoration of the disturbed area to a condition that appears to be natural.

At the present time, there are approximately 85 existing mining claims in the WSA. Estimates as to the number or locations of claims that would prove to be valid are beyond the scope of this report, as are predictions of the impacts of mining activities on such claims.

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. The impacts to locatable mineral resources would also be significant under this alternative. The impacts on cultural resources, air, education/research, and realty actions were clearly insignificant; therefore, they were not discussed.

1. Impacts to Minerals

There has been no energy minerals production within the WSA. Because the potential appears to be low, impacts to the energy minerals industry would be minor in the short-term. It is assumed that exploration and leasing for energy minerals would not be allowed after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential or for production and development. Although the energy minerals industry could be affected in the long-term, the impacts would not be significant.

Strategic and critical minerals are known to occur in and around the Organ Mountains WSA and several mines along the west face of the Organ Mountains are patented. There has been production in the past. Numerous unpatented claims are located within the WSA and a recent BLM

Mineral Resource Inventory (1981) indicates excellent mineral potential. However, there is currently no mining activity other than assessment work. Valid claims located before wilderness designation could be developed to their full potential. However, during development, the mining companies may incur additional costs of operation depending on restrictions on the type and location of access. Since there is currently no mining activity, the economic impact would be minimal in the short-term.

It is assumed that no new exploration, prospecting, or location of mining claims would be allowed after wilderness designation. Mineral trends could not be followed outside of the existing valid claim boundaries. Full development of the mining district could not take place under this alternative. Most of the minerals are on the list of strategic and critical minerals. Wilderness designation could have significant impacts on locatable mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including threatened or endangered plant species (see Chapter II, Vegetation) in the WSA.

Other than the possibility of development of valid existing mining claims, no major surface disturbing activities are proposed in existing BLM plans and vehicle use is presently limited to existing roads and trails. The added protection for water, soils, and vegetation as a result of wilderness designation would not significantly differ from that of nonwilderness designation.

b. Wildlife

Restrictions on surface disturbing and mechanized activities and vehicular access would provide protection of wildlife habitat and reduce the potential for harassment of wildlife. This added protection would have the greatest effect on desert bighorn sheep, a state endangered species, if they are ever transplanted in the area. Restricted vehicular access would discourage commercial collectors from looking for the Trans-Pecos rat snake, another state endangered species.

Habitat manipulations recommended in the proposed deer Habitat Management Plan (HMP) (BLM 1981) would require approval by the State Director on a project-by-project basis. Since the objectives for the management of wildlife habitat are normally compatible with the objectives for maintaining general wilderness character, it is highly unlikely that necessary projects would be denied.

Other than the possibility of development of valid existing mining claims, there are no existing or proposed activities that would result in extensive surface disturbance. In addition, vehicle use is presently limited to existing roads and trails, and only 1 additional mile of vehicle trail would be closed to use under this alternative. Since

wilderness management would not significantly differ from management specified in existing BLM plans, the impacts on wildlife under this alternative would not be significant.

c. Visual

Existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I which allows only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity. Since all but 593 acres of the WSA are within the Organ Mountains Scenic ACEC and would be managed as a Class I under nonwilderness management, the impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Motorized access on vehicle trails within the designated wilderness would not be permitted. This prohibition would affect only 1 mile of existing vehicle trail. Checking livestock would be on foot or horseback.

Rangeland developments in the area do not have existing access and cross-country vehicle use is presently prohibited. Authorization for vehicular access or for the use of mechanized equipment to maintain existing rangeland developments would be given only if there were no practical alternatives and would be on a permit basis.

The impacts to livestock operators would be insignificant and would consist primarily of the minor inconveniences of securing permits.

e. Recreation

Since the WMP does not allow competitive events such as foot races in designated wilderness, the Baylor Pass Run would not be permitted. Management of the deer population under a HMP could result in the area being reopened to deer hunting in the long-term. The overall impacts to existing recreation resources in the area would not be significant.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. Most of the area could be managed to maintain its natural appearance, opportunities for solitude and primitive recreation, and special features in the long-term.

Management of the deer population under a HMP and the transplant of desert bighorn sheep in the WSA would enhance the special wildlife features of the area.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 7,144 acres of public land in the Organ Mountains WSA would be recommended

nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Under the No Action/No Wilderness Alternative, all but 593 acres along the western periphery of the WSA would be within the designated Organ Mountains Scenic ACEC. The special management objectives and requirements for the ACEC are described in Chapter III, Visual.

The ACEC would be withdrawn from saleable and locatable mineral entry subject to valid existing rights. Estimates as to the number or locations of claims that would prove to be valid are beyond the scope of this report, as are predictions of the impacts of mining activities on valid claims.

Under the No Action/No Wilderness Alternative, wilderness values, minerals, and visual resources could be significantly impacted in the long-term. The impacts to cultural resources, air, education/research, and realty actions were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

The wilderness values of the Organ Mountains WSA would not be provided with long-term Congressional protection. Approximately 6,690 acres in the Organ Mountains WSA would be within the 8,947 acres administratively designated as the Organ Mountains Scenic Area ACEC. Since the objectives of the ACEC are to protect, to prevent irreparable damage, and to enhance scenic values, the ACEC would provide all but 593 acres along the west boundary of the WSA with administrative protection, at least in the short-term. However, management of the area as an ACEC would be subject to administrative change in the long-term.

The enhancement provisions of the ACEC special management requirements would benefit the special scenic values of the WSA by requiring removal of the large gravel piles adjacent to the Stevenson-Bennett Mine.

The mineral withdrawal would provide the natural values, opportunities for solitude and primitive recreation, and special features in a major part of the WSA with some protection from the surface disturbance associated with mineral development.

Under this alternative, the impacts to wilderness values could be significant in the long-term because protective management of the area would not be ensured through Congressional designation.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The existing water, soils, and vegetation in 92 percent of the WSA would be protected as long as the Organ Mountains Scenic Area is administratively designated as an ACEC. There would be no significant impacts on water, soils, and vegetation under this alternative.

Withdrawing the rest of the area from mineral entry would protect the existing vegetation and threatened or endangered plants from further surface disturbing activities. Impacts to water resources would not be significant. The impacts of development of existing valid claims on public land would be the same as those described under the All Wilderness Alternative.

b. Wildlife

The impacts to wildlife would be the same as those described under the All Wilderness Alternative as long as the area is administratively designated as an ACEC with the following exceptions. Recommended habitat manipulations in the proposed deer HMP could be fully implemented and desert bighorn sheep could be transplanted in the area without case-by-case approval from the State Director.

c. Visual

Existing visual resources would be significantly protected under this alternative since 92 percent of the WSA would be managed as an ACEC for visual resources. Under VRM Class I management, only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted. The enhancement provisions of the ACEC special management requirements would benefit the special scenic values of the WSA by requiring the removal of the large gravel piles adjacent to the Stevenson-Bennett Mine.

d. Minerals

Impacts to minerals under this alternative would be the same as those described under the All Wilderness Alternative.

e. Livestock Grazing

There would be no impacts to livestock grazing under this alternative.

f. Recreation

Management of the deer population under a HMP could result in the area being reopened to deer hunting in the long-term. The overall impacts to existing recreation resources would not be significant under this alternative.

APPENDIX L

ROBLEDO MOUNTAINS WSA (NM-030-063)

I. GENERAL DESCRIPTION

A. Location

The Robledo Mountains Wilderness Study Area (WSA) is located in central Dona Ana County. The WSA is approximately 8 miles northwest of Las Cruces, New Mexico, on the west bank of the Rio Grande.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Las Cruces, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The Robledo Mountains WSA is characterized by an arid, continental climate with mild winters and pleasant to hot summers.

Average annual precipitation in the area is slightly less than 9 inches, however, a wide variation in annual totals is characteristic of arid climates. More than half of the total annual precipitation occurs from July to September. Rainfall during these months usually is from convective thundershowers that are commonly brief and intense.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is in the middle 90's. In January, the coldest month, average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

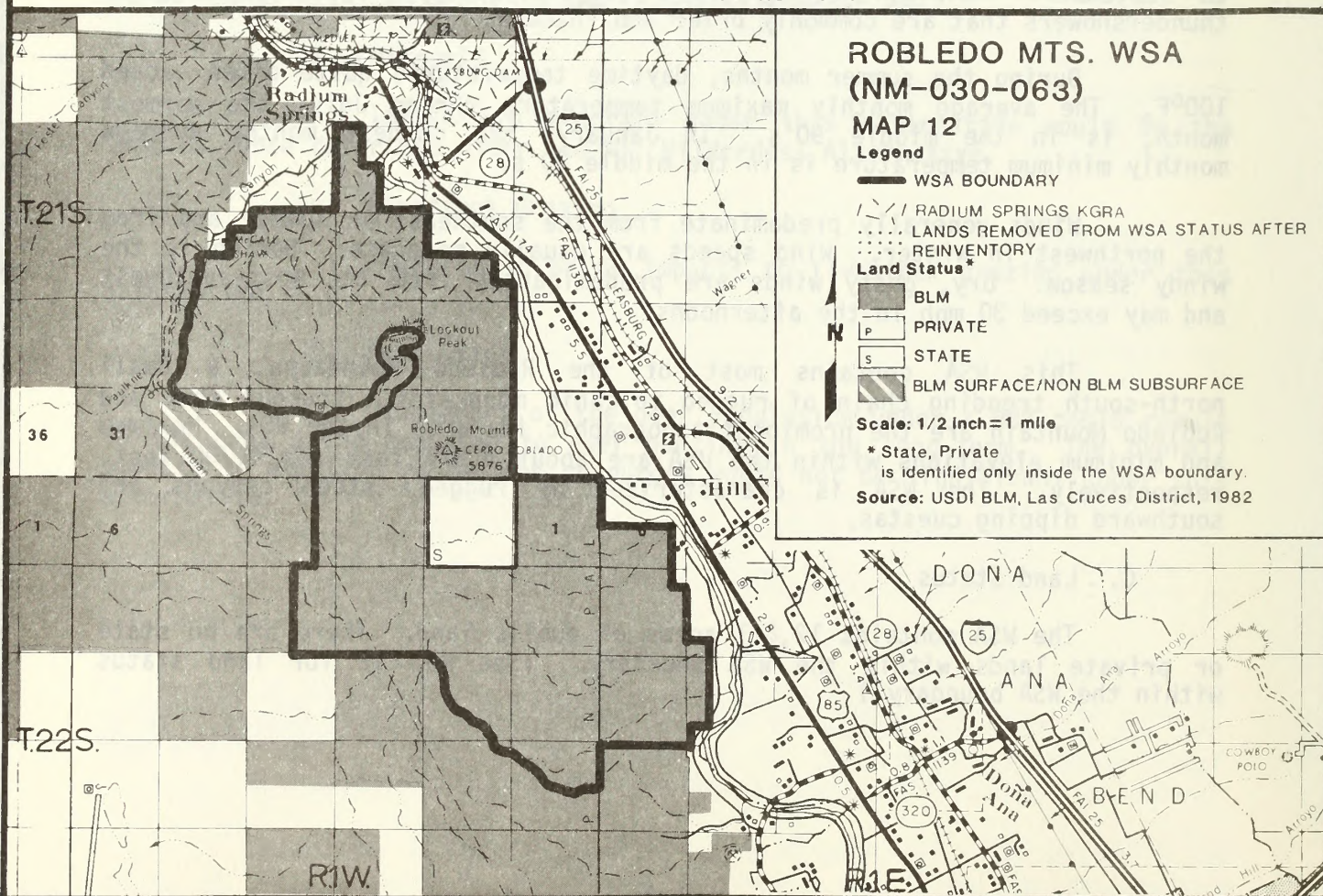
This WSA contains most of the Robledo Mountains, a small north-south trending chain of rugged volcanic mountains. Lookout Peak and Robledo Mountain are the prominent topographic features in the WSA. Maximum and minimum elevations within the WSA are about 5,876 feet and 4,300 feet, respectively. The WSA is characterized by rugged, steep canyons and southward dipping cuerdas.

C. Land Status

The WSA contains 12,811 acres of public land. There are no state or private lands within the WSA boundary. (See Map 12 for land status within the WSA boundary.)



The east side of the Robledo Mountains WSA.



D. Access

There is no legal access to the Robledo Mountains WSA. County Road D59, which branches south off of State Highway 85 about 3/4 of a mile west of Radium Springs, crosses the state section on the northern boundary of the WSA. Physical access is available by hiking about 1/2 mile south from D59 to the north boundary of the WSA.

Physical access to the southern boundary of the WSA is available by four-wheel drive trails branching off of State Highway 430.

II. EXISTING RESOURCES

A. Geology

The Robledo Mountains WSA lies within the Basin and Range Physiographic Province. This province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake deposits.

The Robledo Mountains are an uplifted fault block within the Rio Grande Rift. The mountains are bound on the east and west by northeast trending faults. There are several smaller transverse faults occurring within the Robledo Mountains.

The mountains consist chiefly of Paleozoic sedimentary and Cenozoic igneous rocks. The sedimentary rocks are primarily limestone, dolomite, shale, and siltstone. The igneous rocks include a few basalt cinder cones and plugs in the southern part of the Robledo Mountains and a Tertiary intrusive rhyolite sill in the northern part.

B. Water

The Robledo Mountains WSA forms part of the boundary between the southern Jornada del Muerto and the Mesilla Valley. Both basins contribute to the larger Rio Grande Basin.

Surface water within the WSA drains into the Rio Grande Basin through an ephemeral stream system. Principal drainages include Faulkner, Indian Springs, and Apache Canyons. Surface flow generally occurs as a result of summer thundershowers.

Ground water moves into the Rio Grande Valley from the uplands to the valley border and then moves down the valley. Ground water is available primarily in the alluvial fill down gradient from the WSA. Significant recharge to the ground water reservoir occurs in Faulkner Canyon during flood runoff. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Two major soil types occur within the Robledo Mountains WSA. On mountain tops and steep sideslopes, soils are shallow, stony, and are interspersed between areas of limestone outcroppings. On footslopes and alluvial fans at the base of the mountains, slopes are more gentle. The soils typically are deeper, have a gravelly surface, and a subsurface layer high in calcium carbonates (caliche).

D. Vegetation

1. General

The vegetation and associated range sites within the Robledo Mountains WSA consist of three major types:

Vegetation Type	Range Site	Federal Acres
Grass-mixed desert shrub	Mountains	8,925
Creosote	Gravelly	2,688
Mixed desert shrub	Gravelly sand	1,198

Grass species (black grama, tobosa, other gramas, and fluffgrass) exchange dominance with mixed desert shrub species such as creosote, tarbush, ocotillo, mariola, sotol, spicebush, acacia, sumac, yucca, and cacti in the Robledo Mountains. A few scattered juniper trees are also present.

Creosote gravelly areas occur on both sides of the mountain range in the flats. Other shrub species include mariola, tarbush, and mesquite. Fluffgrass is the only common grass species.

Shrub species on gravelly sand in sandy arroyos include brickelbush, desert willow, creosote, mesquite, and tarbush. Associated grass species are fluffgrass and tobosa.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus
 Status: Bureau sensitive species proposed for Federal listing.
 Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus
 Status: Selected by New Mexico State Heritage Program as a special concern element.
 Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000--5,000 feet. Disappearing rapidly due to over collection.

E. Wildlife

1. General

Nearly half of the Robledo Mountains WSA is a mixed shrub mountain habitat site with a large area of grass. Small portions along the outside edges are creosote foothills and creosote breaks.

There are several special habitat features that enhance the value of the WSA for wildlife. The limestone cliffs are pocketed with caves which are used by many animals. Bats roost in these caves and larger animals use them for shelter. Golden eagles and other raptors also nest on these cliffs. Whitewash (droppings from raptors) indicate that many birds roost on the cliffs overlooking the river.

The nearness of the Rio Grande is also significant to wildlife in the WSA. Mule deer and other large mammals can water there and move back up the canyons into the WSA. Mule deer numbers in the area are low.

Bird life is fairly varied because there are four different habitat sites within the WSA and a fifth one, riparian (the Rio Grande), close by. Some birds which use the Rio Grande as a migration route may occasionally stop over in the WSA.

2. Threatened or Endangered Fauna Species

Some of the birds which may occasionally use the WSA are Federal-endangered species, such as the bald eagle and the peregrine falcon. However, these birds do not depend on the WSA as crucial habitat and are only transitory in the WSA.

A state-listed endangered species which is known from the area is the Trans-Pecos rat snake. Collecting is the main threat this species faces. Its preferred vegetation is rocky areas supporting shrubby vegetation, which is typical of much of the WSA.

F. Visual

The Robledo Mountains scenic quality rating unit has a Class B or moderate rating. The Robledo Mountains reach a maximum elevation of 5,876 feet. Banded blocky outcrops are characteristic of upper elevations with fan and fluvial deposits forming downward sloping rounded hills at lower elevations. The entire landform tilts southward. Landform colors are banded with alternate light and dark reddish browns. Vegetation is sparse and irregular in colors of dark creosote green and lighter gray greens and tans.

Portions of the Robledo Mountains WSA are in two Visual Resource Management (VRM) Classes as follows: Class II-6,533 acres, Class III-6,278 acres.

G. Cultural

There are 20 known historic and prehistoric sites in and along the boundaries of the Robledo Mountains WSA. The most significant and unique of these sites are small caves and pithouse village sites that are undisturbed. In addition, there is a 10 room pueblo in the WSA. This WSA contains high potential for significant prehistoric resources. The major historic site in the WSA is a heliograph station on top of Lookout Peak, established in the early 1880's to communicate with similar stations about Apache activities. A portion of the station still remains on top of Lookout Peak.

H. Air

Generally, the quality of air within the Robledo Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the Robledo Mountains WSA. Four Federal geothermal leases have been let on parcels located wholly or partially within the WSA.

The extreme northern portion of the WSA in T. 21 S., R. 1 W., Sections 15, 20, 21, 22, and 23, lies within the Radium Springs Known Geothermal Resource Area (KGRA). (See Map 12 for general location of the KGRA.) The entire WSA has been classified as prospectively valuable for geothermal resources by the Minerals Management Service (MMS). Geothermal resources are known to occur at the former Radium Hot Springs resort, about 1 mile northeast of the WSA, where hot water was pumped from a rhyolite sill. Hunt Energy drilled a deep geothermal well 2 miles north of the WSA in 1980 and found water temperatures in the range of 200°F. The lessee is exploring the possibilities of building a 25-30kw electrical generating plant utilizing geothermal energy. Another possibility being investigated is that of a geothermal heated agricultural project such as a greenhouse. The presence of the WSA in the Rio Grande Rift, the proximity to a known geothermal resource, and the occurrence of other geologic indicators suggests that the WSA has moderate potential for geothermal energy.

The entire area has also been classified by the MMS as prospectively valuable for oil and gas. The nearest oil and gas test well is the Sinclair No. 1 Federal, about 2 miles southwest of the WSA in T. 22 S., R. 1 W., Section 27, NW1/4. This well was drilled to a depth of 6,510 feet and was a dry hole. The bottom of the hole is in a rhyolite sill. At the present time, the potential for oil and gas occurrences within the WSA appears to be low due to absence of good petroleum source rocks and other geologic indicators (BLM Minerals Resource Inventory 1981). However, further prospecting and exploration are needed to fully assess this potential.

2. Non-Energy Minerals

The southern half of the WSA contains limestones and siltstones that are potentially valuable as building or decorative stone. BLM Community Pit No. 1, about 1 mile southeast of the WSA in T. 22 S., R. 1 E., Section 19, SE1/4 SE1/4, contains some of the same rock formations found within the WSA. This community pit supplies large quantities of rock which are used extensively in the construction trades in the Las Cruces area. Sand and gravel occur along the eastern edge of the WSA in the terraces above the Rio Grande Valley and also near the northern end of the WSA in arroyos.

The potential for future extraction of building and decorative stone in the southern portion of the WSA, especially in the vicinity of T. 22 S., R. 1 E., Section 18 and T. 22 S., R. 1 W., Sections 13 and 24 is good. The potential for future sand and gravel extraction is also very good. The Las Cruces area is experiencing rapid growth and the demand for construction materials will continue. The Robledo Mountains could supply

some of these common variety materials. The potential for development of these saleable minerals is moderate to high.

Minerals known to occur within or adjacent to the WSA are:

a. High-Magnesium Dolomite

Kottlowski (1957) reports that the Robledo Mountains contain a large volume of high-purity dolomite. About 4.5 million tons are reported to occur in the Ordovician Upham dolomite and 18 million tons in the Silurian Fusselman dolomite. Chemical analyses show that the Upham dolomite contains 44.9 percent magnesium carbonate and that the Fusselman dolomite contains 45.5 percent magnesium carbonate. These dolomites are potential sources of magnesium.

b. High-Calcium Limestone

Kottlowski (1962) reports the occurrence of high-calcium limestones in the Robledo Mountains. Cliff forming high-calcium limestones of Pennsylvanian age crop out in the north central part of the WSA. However, the outcrops which form near vertical cliffs high above the mountain base are inaccessible and would be very expensive to mine.

More accessible high-calcium limestones are present in the Hueco formation in the southeastern portion of the WSA. A channel sample from an outcrop in T. 22 S., R. 1 E., Section 18, NW1/4, showed 97.6 percent calcium carbonate, 0.5 percent magnesium carbonate, and 0.3 percent silica. These high-calcium limestones are an excellent source for Portland cement. Potential for an economic deposit is high.

c. Manganese

Farnham (1961) described several manganese occurrences in and adjacent to the Robledo Mountains WSA: the Willis properties in T. 22 S., R. 1 E., Sections 18, 19, and 30 and the Gilliland deposits in T. 22 S., R. 1 W., Section 2. These deposits contain earthy manganese oxides with minor amounts of pyrolusite and psilomelane. Calcite occurs as gangue. The manganese occurs in stringers and small irregular masses along fractures and bedding planes in limestone. The deposits are small and sporadic, seldom more than 3-8 feet wide and 20-30 feet long. In 1943, several tons of hand-sorted ore, containing about 23 percent manganese, were shipped from the Willis deposits to a stockpile in Deming, New Mexico. There has been no other known production.

d. Iron

Porous and broken ore consisting of intergrown hematite, goethite, and limonite occurs in the Iron Hill deposits, less than 1/2 mile southwest of the WSA. The deposits have replaced limestone and filled broken and dissolved openings in the limestone. The deposits occur both parallel and transverse to the bedding. There are about 16 prospects consisting of pits, shafts, and adits. According to Kelly (1949), the ore would probably average 50 percent iron and reserves would be 10,000 to 20,000 tons. There has been no production from the Iron Hill deposits. This iron trend may continue at depth northeastward into the WSA.

The small size and irregular occurrence of the deposits, plus the fact that the demand for iron would continue to be supplied by the large deposits of the midwestern United States for quite some time, makes exploitation of the Iron Hill deposits unlikely.

Because of the geologic environment in the Robledo Mountains (Tertiary intrusives, normal faulting, favorable limestone host rocks, and known mineral occurrences), there is moderate potential for discovery of additional mineral occurrences within the WSA. The Atlantic Richfield Company submitted an Energy and Mineral Resource Evaluation (1983) indicating high intermediate favorability for the occurrence of copper, lead, zinc, silver, and gold in the WSA. The high intermediate favorability rating indicates that a number of geologic characteristics are present that suggest the occurrence of these minerals. Only further exploration and geologic investigations could provide the information necessary to more fully evaluate the nature of known occurrences and the potential for additional discoveries.

Of the locatable minerals known to occur in the WSA, only manganese is on the National Defense Stockpile Inventory of Strategic and Critical Minerals. The high-calcium limestone appears to have the most potential for being explored and developed at some unknown time in the future. Continued growth in the Las Cruces-El Paso areas would necessitate a continuing need for cement-grade limestone to be used in the construction industries. It is possible that the Robledo Mountains could be a future source of high-calcium limestone.

B. Watershed

Within the Robledo Mountains WSA, water is used primarily by livestock and wildlife. The only water development within the WSA boundary that utilizes surface runoff is a dirt tank (see Livestock Grazing). The Robledo Mountains WSA is within the Lower Rio Grande declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Robledo Mountains WSA. Most of this WSA is ungrazed by livestock due to the steep slopes or the lack of water. Licensed grazing use on public land includes cattle and a few horses. The Corralitos Venture (3013) is under an implemented Allotment Management Plan (AMP). There is a 45-acre tract of unallotted Federal land on the northern end of the WSA near the Rio Grande.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
F. Burke 3008	10,802	1,020	291	3%
Corralitos Venture 3013	130,109	13,860	151	.1%
Cohorn and Johnson 3040	8,968	636	8,438	94%
Indian Springs 3047	14,931	1,700	3,886	26%
Unallotted	45	0	45	
TOTAL			12,811	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
F. Burke 3008	dirt tank	T. 22 S., R. 1 W., Sec. 24
Cohorn and Johnson 3040	interior fence	1 1/2 miles
Indian Springs 3047	trough ^{b/} interior fence	T. 21 S., R. 1 W., Sec. 33 1/4 mile

Boundary Fences:

Indian Springs 3047 and Cohorn-Johnson 3040	4 3/4 miles
Cohorn-Johnson 3040 and Rio Grande	1 mile
Cohorn-Johnson 3040 and unallotted Federal land	1/2 mile
Cohorn-Johnson 3040 and Corralitos Venture 3013	1/2 mile
Corralitos Venture 3013 and Indian Springs 3047	1/2 mile

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

^{b/}Water is hauled to this trough.

3. Potential Rangeland Developments

There is no existing allotment boundary fence between the F. Burke (3008) and Cohorn and Johnson (3040) grazing allotments. The Cohorn and Johnson allotment includes most of the public land around Lookout Peak and the Robledo Mountains, as well as most of the southern half of the WSA. The northern part of the Burke allotment includes that part of the WSA in T. 22 S., R. 1 W., Sections 23 and 24. Livestock trespass between the two allotments is currently not a problem because of the lack of permanent water in the northern part of the Burke allotment. However, existing plans (Rangeland Improvement Justification Plan for Francis Burke allotment--#3008 [BLM 1984]) call for the development of permanent livestock water in the northern part of the Burke allotment (outside of the WSA) and at a later date (Fiscal Year 1986), construction of an allotment boundary fence. The

proposed fence would be generally located on the section line that divides T. 22 S., R. 1 E., Sections 18 and 19; T. 22 S., R. 1 W., Sections 13 and 24; T. 22 S., R. 1 W., Sections 14 and 23; and T. 22 S., R. 1 W., Sections 15 and 22, E1/2. Approximately 1 1/2 miles of the fence would cross the WSA and an additional 1 mile would lie on the WSA boundary. The primary purpose of these developments is not to accommodate increased livestock numbers, but to redistribute grazing use over the F. Burke allotment (3008) and prevent livestock trespass between the two allotments.

D. Recreation

Recreation activities in and around the Robledo Mountains WSA are primarily rockhounding and off-road vehicle (ORV) use. The area around the southeastern part of the WSA is well known for its fossils, especially deposits of petrified marine algae. Desert roses formed from barite are also found here.

A lot of ORV use occurs in the area due south of the WSA and on the vehicle trail that forms the southern boundary of the WSA. ORV use occurs on vehicle trails within the WSA, on roads forming the WSA boundaries, and on the cherry-stemmed road to Lookout Peak. Based on the terrain, soil characteristics, and size of the Robledo Mountains, ORV opportunities are considered excellent. The area receives quite a bit of recreational use because of the ORV opportunities and its proximity to Las Cruces.

Primitive recreation opportunities are discussed in Chapter IV, Primitive and Unconfined Recreation.

E. Realty Actions

The Industrial Communications and Equipment Company and the Western Communications Company share a right-of-way (ROW) for their communication sites on Lookout Peak. The cherry-stemmed access road to the top of Lookout Peak is covered by the shared ROW. The facilities on top of the Peak include a 10 foot by 6 foot building, a round building 6 feet in diameter, and 3 towers ranging from 30 to 50 feet in height.

A small portion of the Robledo Mountains WSA near the Rio Grande is withdrawn by a Presidential Executive Order and reserved for the use of the U.S. Department of State in connection with the Rio Grande Canalization Project. This land withdrawal is scheduled to be reviewed for possible revocation by 1985.

Elephant Butte Irrigation District presently has an application for a ROW on file with the BLM. The application is for a proposed flood control structure on Faulkner Canyon and includes 10 acres of land within the WSA.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

Imprints of man within the Robledo Mountains WSA are generally unnoticeable. The dirt tank and drinking trough within the WSA are located less than 1/2 mile from the boundary. The vehicle trail in T. 22 S., R. 1 W., Sections 3, 10, and 11, is topographically screened from most of the WSA.

The last 2 miles of the cherry-stemmed road to Lookout Peak and the communication site facilities on top of the Peak have a negative impact on the naturalness of the area between Lookout Peak and Robledo Mountain. However, when considered as a whole, the WSA is apparently natural.

b. Solitude

The rugged topography of the Robledo Mountains provides outstanding opportunities for solitude, especially in the many drainages in the southeastern and northwestern parts of the WSA.

Vehicle use on the cherry-stemmed road to Lookout Peak negatively impacts opportunities for solitude in the area between Lookout Peak and Robledo Mountain.

c. Primitive and Unconfined Recreation

Primitive recreation opportunities in the Robledo Mountains WSA include hiking, backpacking, caving, hunting, and rockhounding.

Hiking and backpacking opportunities are somewhat limited by the size and shape of the WSA. The area is not large enough to accommodate a backpack trip of any length. The state land in T. 22 S., R. 1 W., Section 2, disrupts the topographic integrity of the WSA and limits hiking opportunities.

Geronimo's Cave presents the only known caving opportunity in the WSA. The cave is located just east of Lookout Peak in T. 21 S., R. 1 W., Section 26. The cave entrance is through a crevice and the cave contains a 40 foot pit. The one active speleological group in the Las Cruces area, the Mesilla Valley Grotto, visits the cave occasionally.

During the intensive inventory phase of the wilderness review, opportunities for primitive recreation were judged as not being outstanding in terms of the quality of recreation opportunities available in the WSA.

Off-road vehicle use and rockhounding opportunities are discussed in Chapter III, Recreation.

2. Special Features

The Robledo Mountains WSA contains special ecological and cultural features of scientific and educational interest.

The ecological features include both vegetation and wildlife values. The Robledo Mountains provide habitat for a Bureau sensitive plant species proposed for Federal listing and a plant species of special concern to the New Mexico State Heritage Program (see Chapter II, Vegetation). Special wildlife habitat features such as cliffs, caves, and the nearby Rio Grande account for the variety of wildlife found in the WSA. The area also provides habitat for the Trans-Pecos rat snake, a state endangered species. (See Chapter II, Wildlife.)

The Robledo Mountains WSA encompasses 20 known historic and prehistoric cultural sites. The area contains high potential for significant prehistoric resources. (See Chapter II, Cultural.)

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Robledo Mountains WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	8,925
creosote	2,688
Trans-Pecos shrub savanna	1,198

b. Distance from Population Centers

The Robledo Mountains WSA is approximately 2 hours driving time from El Paso, Texas; 1 hour from Las Cruces, New Mexico; 3 hours from Albuquerque, New Mexico; 5 hours from Tucson, Arizona; and 7 hours from Phoenix, Arizona.

B. Manageability

Several factors potentially affect the capability of the Robledo Mountains WSA to be managed as wilderness: land status patterns, the cherry-stemmed road to Lookout Peak, and the possibility of ORV use.

The 640 acres of state land in T. 22 S., R. 1 W., Section 2, are located in the center of the mountains and disrupt the topographic continuity of the WSA. This limits primitive recreation opportunities because the total Robledo Mountains area is not available to the recreationist. In addition, nonconforming or nonwilderness uses such as geothermal or mineral development on this section would negatively affect wilderness values in the Robledo Mountains.

The cherry-stemmed road to Lookout Peak impacts the naturalness and solitude of the local area between Lookout Peak and Robledo Mountain. The continued use of vehicles on this road would result in even more significant impacts on solitude.

There is also the possibility that unauthorized ORV use in the canyons off the Lookout Peak road and on the vehicle trail in T. 22 S., R. 1 W., Sections 3, 10, and 11 would pose wilderness management problems. These areas presently receive quite a bit of ORV use. At a minimum, signing and patrol of these areas would be required to deal with ORV use.

The Robledo Mountains WSA could be managed to preserve its existing wilderness values.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Robledo Mountains unit during both the public comment period on the New Mexico Wilderness Review Initial Inventory Decision (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). Maps and one detailed report with a list and legal descriptions of developments were included.

In the March 1980 WSA Proposals, the BLM proposed to drop this area. This recommendation was based on the cumulative impacts of vehicle trails and rangeland developments and the effects of the unit's boundary configuration on wilderness characteristics.

The analysis of public comments revealed concern over the BLM's evaluation of the Robledo Mountains' wilderness characteristics. Approximately 75 percent of the personal letters supported WSA designation of part of the unit. Sizes for the proposed WSA varied from 8,500 to 42,000 acres. Other supporting reasons included outstanding opportunities for solitude and primitive recreation due to the topographic screening offered by the many hills and drainages. Many supplemental values were listed, including the unit's proximity to Las Cruces, the outstanding variety of ecotypes found in the unit, and the uncommon plant species and birds observed in the area.

Comments supporting the BLM's recommendation to drop the Robledo Mountains WSA were also received. Most of these comments cited rangeland developments, vehicle trails, and mining activity as negatively impacting the naturalness of the area and detracting from opportunities for solitude or primitive recreation.

A reevaluation of the Robledo Mountains WSA's wilderness characteristics, based on public comments, additional field checks, and inventory information, indicated that part of the unit met the basic wilderness criteria. The area around Lookout Peak and Robledo Mountain was designated a WSA in the November 1980 New Mexico Wilderness Study Area Decisions.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), a total of 66 public inputs were received on the Robledo Mountains WSA. Fifty-eight of the inputs favored wilderness designation of the area. Of the 58 inputs favoring wilderness designation, 45 were considered to be form letters. Although all of the form letters were not exactly identical, it was obvious that the letters consisted of nearly identical sentences and paragraphs that had merely been rearranged. However, in both the personal letters and form letters, comments favoring wilderness designation fell into 4 major categories: (1) wilderness characteristics; (2) supplemental values; (3) manageability; and (4) resource conflicts.

Comments regarding the Robledo Mountains' wilderness values were generally broad statements such as, "meets the wilderness criteria in BLM's regulations," and "excellent wilderness characteristics." These comments did not provide any additional discussion to change BLM's evaluation of the quality of the area's mandatory wilderness characteristics.

Supplemental values most often listed as reasons for wilderness designation were Indian sites and "outstanding wildlife habitat, especially for eagles and peregrine falcons." These comments did not include any discussion of how or to what degree these values contribute to the area's value for wilderness. In addition, comments such as the area's "superb wildlife habitat" are misleading. The wildlife habitat in the Robledo Mountains is representative of other similar desert mountain ranges along the Rio Grande, but is not considered significant. And as stated in the wildlife section, eagles and peregrine falcons do not depend on the WSA for crucial habitat and are only occasionally found in the WSA.

Manageability comments included expressions of disagreement with the use of manageability conflicts such as unauthorized off-road vehicle use to support a nonwilderness recommendation and general comments that the area is manageable. Numerous comments suggested land exchanges with the State, closure of the cherry-stemmed road to Lookout Peak, or limiting use of the road to the companies with facilities on the Peak to solve manageability problems. BLM did not consider closure or restriction of the Lookout Peak road because the original right-of-way authorizing the communication facilities represents a valid existing right.

Comments on resource conflicts in the area by those favoring wilderness designation overwhelmingly expressed the idea that geothermal and other mineral resources should be developed elsewhere. The BLM's Wilderness Study Policy states that, "recommendations as to an area's suitability or nonsuitability will reflect a thorough consideration of any identified or potential energy and mineral resource values." The question of wilderness vs. mineral development will ultimately be Congress' decision.

Comments opposing wilderness designation for the Robledo Mountains WSA fell into two categories: (1) indicating agreement with BLM's assessment and recommended action or (2) listing potential mineral resources as the reason for opposing wilderness designation. Information submitted by industry regarding the mineral potential of the Robledo Mountains has been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 12,811 acres of public land within the Robledo Mountains WSA would be recommended suitable for wilderness designation. (See Map 12 for location of the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts to minerals and wilderness values would be significant in the long-term. The impacts on soils, vegetation, and wildlife could be significant if important economically exploitable mineral resources are found within the area. Cultural resources and air quality were not discussed because the impacts were clearly insignificant.

1. Impacts to Minerals

There is currently no mineral production in the Robledo Mountains WSA. However, the WSA has moderate geothermal energy potential and lies partially within a Known Geothermal Resource Area (KGRA). All or part of four post-Federal Land Policy and Management Act (FLPMA) geothermal leases lie within the WSA boundary. Post-FLPMA geothermal leaseholders could be significantly impacted in the short-term (the life of the lease) since any exploration or development work that would impair wilderness values would not be allowed.

Because the WSA appears to have low potential for oil and gas, impacts to the oil and gas industry would be minor in the short-term.

After wilderness designation, the existing geothermal leases, if unexplored, would not be reissued. No new leases, either geothermal or oil and gas, would be let after wilderness designation. Future options to explore for and develop geothermal or oil and gas resources in the WSA would be forgone. Energy minerals, especially geothermal, could be impacted in the long-term. These impacts could be significant for geothermal energy resources.

If the area is designated wilderness, approximately 12,811 acres that could be potentially favorable for oil and gas and geothermal resources would not be leased. Assuming that 12,811 acres of Federal minerals could have been leased noncompetitively at a rental fee of \$1.00 per acre, a total of \$12,811, of which the State of New Mexico receives 50 percent, would be lost.

High-calcium limestone, high-magnesium dolomite, and manganese are known to occur within the WSA and there is moderate potential for the occurrence of copper, lead, zinc, silver, and gold. However, there is currently no mining activity. If mining claims are located prior to designation and are determined to be valid, they could be developed to their

full potential. However, during development, the mining companies may incur additional costs of operation depending on restrictions on the type and location of access. Since there is currently no activity, the economic impact would be minimal in the short-term.

It is assumed that after wilderness designation, no new prospecting and location of mining claims would be allowed and additional exploration for locatable minerals outside of existing claim boundaries would also be prohibited. The minerals industry could be significantly affected in the long-term since the full potential of the area could not be assessed.

The disposal of known occurrences of building and decorative stone and sand and gravel under the Mineral Materials Sales Act would not be allowed. The potential economic benefits to the construction industry would be forgone. However, since these materials are available outside the WSA, the impacts would not be significant.

In summary, based on existing information, it appears that wilderness designation could have significant impacts on geothermal and locatable mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation, including a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation), in most of the WSA. Off-road vehicle (ORV) use on existing trails would be prohibited, allowing some vegetative reestablishment.

The allotment boundary fence proposed in the Range Improvement Justification Plan (BLM 1984) for the F. Burke allotment (3008) could be constructed if it were determined through site-specific analysis to be necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access along the fence would not be authorized. Installation of the fence would result in soil disturbance and the destruction of some vegetation, but the impacts would not be significant.

Since existing and proposed BLM plans do not identify any potential uses or activities (other than potential mineral resources) that could result in extensive surface disturbance, the additional protection for water, soils, and vegetation provided by wilderness designation would not be significant. However, the impacts of the added protection of wilderness management could prove to be significant for soils and vegetation if future mineral resources information indicates important economic mineral resources within the Robledo Mountains WSA.

b. Wildlife

Under wilderness management, wildlife habitat would be protected from destruction and wildlife from disturbance as a result of restrictions on surface disturbing and mechanized activities. Restricted vehicular access could lessen the potential for harassment and poaching of wildlife, reduce hunting pressure in the area, and protect a state-endangered snake found in the area by discouraging commercial collectors from looking for this species.

Since existing and proposed BLM plans do not identify any potential uses or activities (other than potential mineral resources) that could result in extensive surface disturbance, the additional protection for wildlife provided by wilderness designation would not be significant. However, the impacts of the added protection of wilderness management could prove to be significant for wildlife if future mineral resources information indicates important economic mineral resources within the Robledo Mountains WSA.

c. Visual

Existing visual resources would be protected since the area would be managed under the more restrictive Visual Resource Management Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted under a Class I designation.

The impacts to visual resources under this alternative would not be significant.

d. Livestock Grazing

Generally, motorized access within the designated wilderness would not be permitted. However, if there were no practical alternatives, permits could be issued to allow the affected permittee to haul water to the trough just inside the boundary of the area when livestock are on this part of the Indian Springs allotment (3047) or to allow maintenance of the dirt tank on the Burke allotment (3008).

The allotment boundary fence proposed in the Range Improvement Justification Plan (BLM 1984) for the Burke allotment (3008) could be constructed if it were determined through site-specific analysis to be necessary for the purpose of rangeland or wilderness protection. Road construction and motorized access along the fence would not be authorized.

The cumulative impacts to livestock operators would be insignificant and would consist primarily of minor inconveniences due to restricted vehicular access.

e. Recreation

Existing recreation use patterns would be impacted since ORV enthusiasts would not be permitted motorized access on existing vehicle trails within the WSA. Because of the availability of similar opportunities south of the WSA, the impact would not be significant.

f. Realty Actions

The right-of-way (ROW) application submitted by Elephant Butte Irrigation District for a flood control structure located on Faulkner Canyon would be denied. The impact of denying the ROW would not be significant.

g. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. However, several factors could slightly impact the ability of the BLM to manage the Robledo Mountains WSA as wilderness in the long-term. Geothermal activities, mineral development, or other nonwilderness uses could occur on the state or private lands adjacent to the north and east boundaries of the WSA. Such activities could degrade natural values and opportunities for solitude. The impacts would be minimal to major depending on the type and extent of the activity and access requirements.

Vehicle use on the cherry-stemmed road to Lookout Peak would periodically disrupt the solitude in the area between Lookout Peak and Robledo Mountain.

Unauthorized ORV use in the canyons off the Lookout Peak road and on the vehicle trail through the southwestern part of the WSA would also periodically disrupt solitude and could, in the long-term, degrade natural values.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 12,811 acres of public land within the Robledo Mountains WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Geothermal exploration drilling, development, and production, prospecting and mining of locatable minerals, and extraction of mineral materials could occur under this alternative. The impacts could be minimal to major depending on which activities occur and the degree of development.

The impacts of geothermal related activities would vary depending on the number of wells drilled, well spacing (20 acres or 40 acres), location and grade of service roads, and pipeline and transmission line requirements. The type of production would also influence the impacts of geothermal activities. Power generation would require different facilities than geothermal heated greenhouses. Residual impacts are also difficult to assess. Abandonment of a geothermal field would include removal of surface installations and rehabilitation of the surface, but the success of rehabilitation is difficult to predict without site-specific analysis.

Locatable mining activities would be regulated to prevent unnecessary and undue degradation. Measures would be required to control

erosion and water runoff, and reshaping and revegetation of disturbed areas would be undertaken where reasonably practical. Mineral materials pits could also be reshaped and reseeded.

Predictions as to which of the above activities or combination of activities might occur or analyses of specific impacts are beyond the scope of this report. Therefore, only potential impacts of a general nature are identified.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values would be significant since management of the area would be subject to administrative change in the long-term. The impacts to soils, vegetation, and wildlife could be significant if extensive mineral development occurs. The impacts to cultural resources, air quality, and realty actions were not discussed because they were clearly insignificant.

1. Impacts to Wilderness Values

The wilderness values and special features of the Robledo Mountains WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

The development of the Elephant Butte Irrigation District's ROW for a flood control structure would impact the wilderness values in the northern part of the area. However, due to the rugged topography of the Robledo Mountains WSA, this development would not affect the overall apparent naturalness of the area or opportunities for solitude.

Geothermal exploration and development accompanied by the construction of new access in the north half of the Robledo Mountains WSA could result in the degradation of naturalness and opportunities for solitude as well as the partitioning of the WSA into roadless areas of less than 5,000 acres. The extraction of building and decorative stone or sand and gravel or mining operations for locatable minerals would impact naturalness, size, and solitude similarly.

There would probably not be significant impacts in the short-term on the overall naturalness of the area or on opportunities for solitude. However, in the long-term, the impacts could be significant depending on the type, location, and extent of the activities and access requirements.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There could be a loss of vegetation and topsoil as a result of geothermal development, locatable mining activities, sand and gravel pits, and building and decorative stone extraction areas (southeast portions) within the WSA. These impacts could be significant in the long-term depending on the type, extent, and location of these development activities.

A moderate increase in sediment load discharged into the Rio Grande could result from new access roads, development of geothermal energy, and development of high-calcium limestone. Increased sediment would contribute to an existing situation where sediment movement into the Rio Grande Valley is already very high.

Installation of the Burke (3008) and Cohorn and Johnson (3040) allotment boundary fence could result in minor soil disturbance and loss of minor amounts of vegetation.

b. Wildlife

Increased vehicular access, geothermal development, and locatable and saleable mining activities could destroy wildlife habitat and disturb animals. Additional human presence could also lead to increased poaching. Depending on the type, extent, and location of development activities, these impacts could be significant in the long-term.

c. Visual

Under this alternative, approximately 6,533 acres in the north, central, and east parts of the WSA would be managed as a VRM Class II. In VRM Class II areas, minor to moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention.

Approximately 6,278 acres in the southwest part of the area would be managed as a VRM Class III. In VRM Class III areas, moderate changes in the landscape as a result of management actions would be allowed as long as the visual contrast is subordinate to the existing landscape.

Since most of the potential mineral resources are in the Class II area and development activities would be required to comply with the restrictions of the Class II designation, the cumulative impacts to visual resources under this alternative would not be significant.

d. Minerals

There would be no impacts to leasable, locatable, or saleable minerals under this alternative. Mineral exploration and development would be regulated to prevent unnecessary and undue degradation. No economic benefits would be lost under this alternative.

e. Livestock Grazing

Motorized vehicles could be utilized as needed for livestock management. Rangeland developments could be checked and maintained on a convenience basis using motorized equipment. The Burke (3008) and Cohorn and Johnson (3040) grazing allotment boundary fence could be installed without design constraints to prevent impairment of wilderness values. There would be no impacts to livestock grazing.

f. Recreation

Geothermal exploration and development in the Robledo Mountains WSA could require the construction of new vehicular access. Improved vehicular access would enhance opportunities for motorized recreation. ORV use could increase, but these impacts would not be significant.

APPENDIX M

WEST POTRILLO MOUNTAINS AND MOUNT RILEY WSAS (NM-030-052)

I. GENERAL DESCRIPTION

A. Location

The West Potrillo Mountains and Mount Riley Wilderness Study Areas (WSAs) are located in southwestern Dona Ana County. A small part of the West Potrillo Mountains WSA extends west into Luna County. The WSAs are approximately 30 miles southwest of Las Cruces, New Mexico, and 50 miles north-northwest of El Paso, Texas.

The following U.S. Geological Survey (USGS) topographic maps cover the WSAs:

Aden, New Mexico	- 15 minute scale
Mount Riley, New Mexico	- 15 minute scale
X-7 Ranch, New Mexico	- 7 1/2 minute scale
POL Ranch, New Mexico	- 7 1/2 minute scale
Camel Mountain, New Mexico	- 7 1/2 minute scale

B. Climate and Topography

The West Potrillo Mountains and Mount Riley WSAs are characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is around 8 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of arid climates as illustrated by annual extremes of 19.60 and 3.62 inches recorded by New Mexico State University at Las Cruces during a 74 year period of record. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration. In the winter, some light snow falls on the average of two years out of three at higher elevations, but usually melts within a few days.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is slightly above 90°F. In January, the coldest month, average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west and may exceed 30 mph in the afternoons.

The West Potrillo Mountains and Mount Riley WSAs contain a variety of terrain. The outstanding topographic features are the volcanic cones of the West Potrillo Mountains, the Mount Riley peaks, and Indian Basin.

WEST POTRILLO MOUNTAINS AND MOUNT RILEY

Over 48 of the West Potrillo Mountains volcanic cones are concentrated in a north-south orientation through the center of the WSA. The cones range from 1,000 feet to 3,000 feet in diameter and elevations at the highest peaks reach 5,400 feet.

Mount Riley and Mount Cox are two of the three high, steep intrusive peaks clustered together east of the West Potrillo Mountains. The highest peak reaches an elevation of nearly 6,000 feet. Prominent talus slopes and alluvial fans surround the base of the peaks.

Indian Basin, a large depression in the southwest part of the West Potrillo Mountains WSA, is rimmed with sand dunes. The Basin's bottom elevation of 4,029 feet is about 75 feet below the surrounding desert floor.

C. Land Status

The West Potrillo Mountains and Mount Riley WSAs contain 148,345 acres and 6,760 acres of public land, respectively. There is a total of 155,105 acres in both WSAs. The West Potrillo Mountains WSA is the largest BLM WSA in New Mexico.

There are no private or state owned surface inholdings in the Mount Riley WSA. A subsurface mineral estate inholding of 640 acres in the Mount Riley WSA is in private ownership.

There are 12,051 acres of state land within the boundary of the West Potrillo Mountains WSA. (See Map 13 for land status.)

D. Access

The West Potrillo Mountains and Mount Riley WSAs are legally accessible from County Roads A03, A05, and A07. County Road A03 forms the southern boundary of the West Potrillo Mountains WSA. This road is known as the Columbus-to-Anapra road and parallels the New Mexico-Mexico border.

County Road A05 branches north from A03 to form the southeast boundary of the West Potrillo Mountains and the west boundary of Mount Riley. At the southern tip of the Mount Riley WSA, County Road A07 branches northeast from A05 to form the east boundary of Mount Riley.

A ranch road continuing north-northeast from County Road A07 ties into a network of roads forming the north and west boundaries of the West Potrillo Mountains WSA.

MAP 13

WEST POTRILLO MTS. & MT. RILEY WSA (NM 030-052)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- ... LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

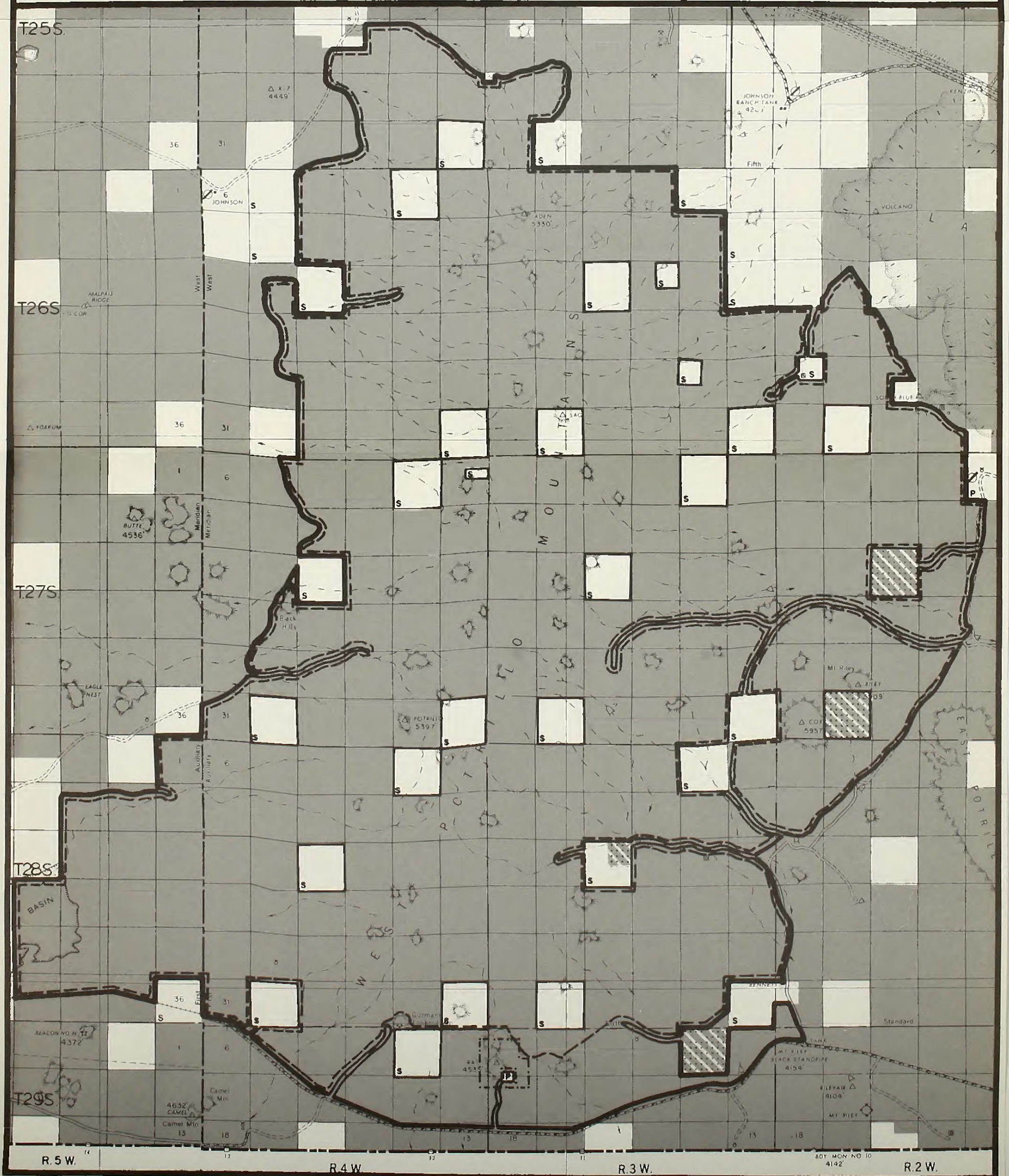
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE
- CHAPPARRAL CINDER CLAIMS

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The West Potrillo Mountains and Mount Riley WSAs are situated within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments.

Locally, the WSAs lie within a major structural intermontane basin known as the Mesilla Bolson and are within the Rio Grande Rift system. Main features of the Mesilla Bolson are coppice sand dunes, wind-blown depressions, maars (low relief volcanic craters), and basalt flows and cinder cones.

The West Potrillo Mountains and Mount Riley WSAs are composed of an extensive basalt field with numerous cinder cones underlain by Quaternary bolson fill and marine sediments that were deposited during the late Paleozoic era and through the Mesozoic era. These Paleozoic sediments are not exposed at the surface.

B. Water

The West Potrillo Mountains and Mount Riley WSAs form a divide for the south-central portion of two surface water drainage basins. To the west is the Mimbres Basin, a noncontributing, closed basin and to the east is the Mesilla Basin which contributes to the larger Rio Grande Basin.

Surface water within the WSAs drains into both river basins through ephemeral stream systems. Generally, these ephemeral streams flatten out below the alluvial fan slopes and become a nonintegrated system of washes and arroyos in the valley floor. Surface flow usually occurs as a result of summer thundershowers.

Significant recharge to the ground water reservoir occurs in the many washes and arroyos during flood runoff. Ground water quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The West Potrillo Mountains and Mount Riley WSAs are characterized by numerous cinder cones, lava flows, and basalt ridges. Four major landforms and soil types occur within the WSAs.

On the large peaks and steep slopes of the Mount Riley WSA, soils are stony, shallow, and interspersed between areas of rock outcropping. On more level areas around footslopes of the hills and mountains, soils typically are gravelly on the surface with sandy textures. These soils are shallow to moderately deep and are usually underlain by caliche or lime coated basalt. On the southern and western parts of the WSAs, the soils are a deep, sandy texture, and have been reworked by wind. Coppice dunes around shrubs are common in these areas. Numerous depressional areas are found throughout the WSAs. These areas receive runoff water and are characterized by deep, fine textured soils.

D. Vegetation

1. General

The vegetation and associated range sites within the West Potrillo Mountains and Mount Riley WSAs consist of five major types:

Vegetation Types	Range Sites	Federal Acres
Creosote	Malpais (lava flow)	52,539
Creosote-mixed desert shrub	Gravelly and shallow sands	46,391
Creosote-mixed desert shrub-grass	Hills	14,781
Mesquite	Sandy	36,165
Mixed desert shrub-tobosa	Draws (swales) and bottomland	5,229

Creosote is the dominant vegetation on the malpais (lava flow) areas located in the northeast half of the West Potrillo Mountains WSA. There is a wide diversity of shrubs, annual and perennial forbs, and grasses in the malpais, many occurring in isolated pockets. Other associated shrub species include snakeweed, various cacti, tarbush, mesquite, mariola, spicebush, and zinnia. Grass species include bush muhly, black grama, dropseeds, other gramas, and tobosa.

Creosote, snakeweed, zinnia, mesquite, yucca, various cacti, Mormon tea, tarbush, and mariola are the dominant shrub species in the shallow soil areas (gravels and sands). Many other shrub species are present in small quantities. Grass species include tobosa, black grama, bush muhly, and dropseeds. Pepperweed, a perennial forb, occurs as a dominant species in some areas. Many other annual and perennial forbs are present in varying amounts. These sites are intermixed across both WSAs.

The West Potrillo Mountains, in the center of the WSA, are creosote-mixed desert shrub aspect dominated hills. Other desert shrubs include snakeweed, mariola, fourwing saltbush, various cacti, and a few juniper trees. Grasses are varied and sparse.

Grass is the dominant vegetation on Mount Riley. Grasses in this area include bush muhly, black grama, tobosa, dropseeds, Hall's panic, and annual grasses. Mixed desert shrubs occur on the side slopes.

Mesquite sandy areas in the WSAs are along the southern boundary near the Mexican border and the east side. Associated shrub species are snakeweed, fourwing saltbush, yucca, broom dalea, Mormon tea, acacia, creosote, and pale wolfberry. Bush muhly is the major grass species with many other grasses occurring in small amounts. Many species of annual and perennial forbs inhabit these areas.

Mesquite, tarbush, snakeweed, and creosote are the dominant species in the deep soils of the draws (swales) and bottomland areas. Tobosa grass dominates in a few swales. Many other shrubs and grasses occur in small amounts.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSAs (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus
Status: Bureau sensitive species proposed for Federal listing.
Habitat: Widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Ferocactus wislizenii - southwestern barrel cactus
Status: Selected by New Mexico State Heritage Program as a special concern element.
Habitat: Widespread; rocky, sandy, or gravelly soils or areas in desert grasslands or canyons; 3,000-5,000 feet.
Disappearing rapidly due to over collection.

E. Wildlife

1. General

Although the West Potrillo Mountains and Mount Riley WSAs are primarily a low-elevation area, they have eight different habitat sites. Creosote and mesquite sand dunes are the two largest. While neither of these are very valuable wildlife habitats, the combination of all the habitat sites and the size of the WSAs create enough diversity that there are a number of different wildlife species. The total area is significant for wildlife.

One significant feature of the area is Indian Basin, a natural depression at the southwest end of the West Potrillo Mountains WSA. During the rainy season, the basin floods and many ducks can be found on the temporary pond. There are a number of other dirt tanks in the WSA; waterfowl can be expected on any of them when they hold water.

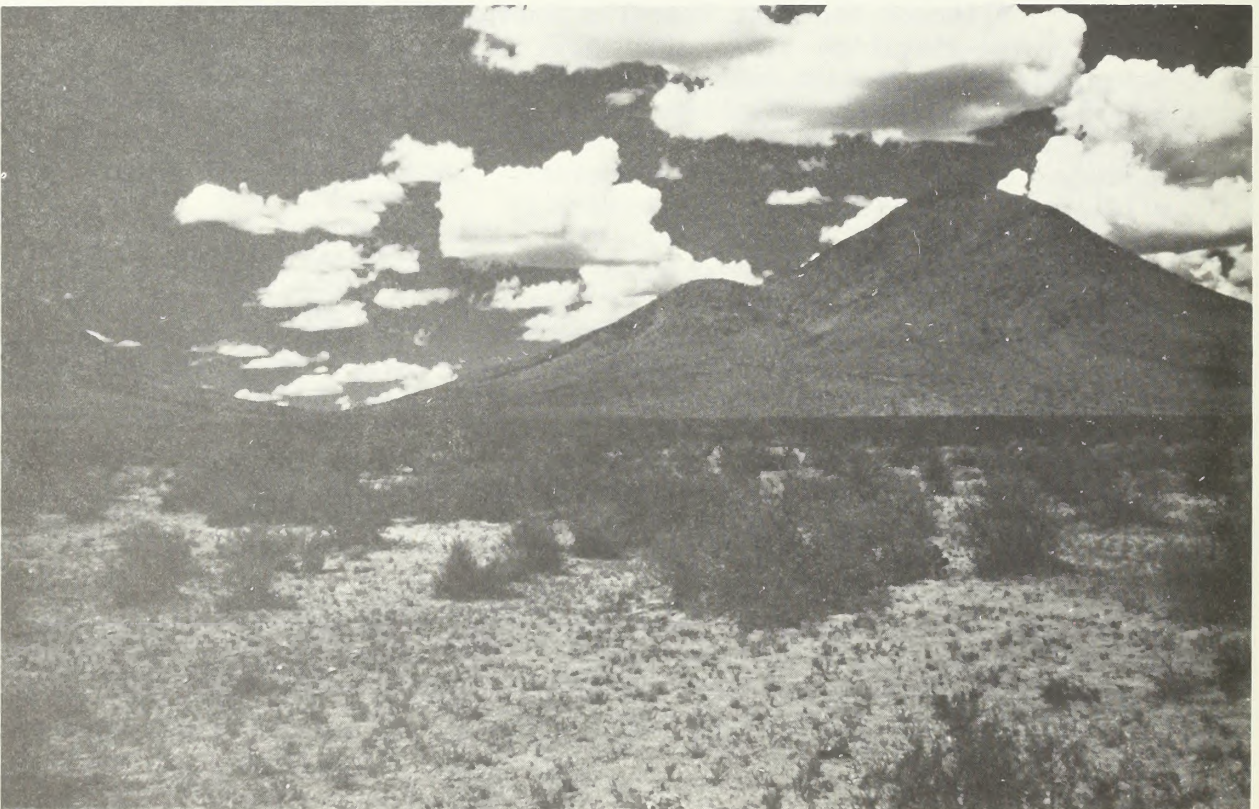
Wintering raptors are found in high numbers in the WSAs. This may be attributed to the high mammal prey base in creosote and mesquite sites (BLM 1981).

Some raptors also nest within the WSAs. Burrowing owls are fairly common in the mesquite sand dune site. Golden eagles and great horned owls nest in the cinder cones of the West Potrillo Mountains. Swainson's hawks nest in soaptree yuccas, a common plant species in some parts of the WSAs (BLM 1979).

Mule deer are found in low numbers within the WSAs. The New Mexico Department of Game and Fish has designated the West Potrillo Mountains as a herd unit area. They estimate that there are now less than half a deer per section, and the optimum number of deer for the area is half a deer per section.



Looking north into the West Potrillo Mountains WSA.



Mount Riley WSA.

2. Threatened or Endangered Fauna Species

There are several records of peregrine falcons, a Federal endangered species, being seen in or near the West Potrillo Mountains WSA in the winter, but there is no reason to think they depend on the WSA as crucial habitat. The Swainson's hawk, which probably nests in the area, is presently under review by the U.S. Fish and Wildlife Service for listing as a threatened or endangered species. A rare mollusc, Ashmunella rileyensis, is endemic to several localities in these WSAs and is listed as an element of special concern by the New Mexico State Heritage Program.

F. Visual

Four scenic quality rating units (SQRUs) describe the West Potrillo Mountains and Mount Riley WSAs. The Mount Riley, West Potrillo Mountains, and Indian Basin SQRUs described below all have Class B (moderate) ratings.

Mount Riley is only one of three massive dome-like landforms within this rating unit that abruptly rise above the desert floor. Colors are dull brown and dark gray with some reddish tones. The dark green and light brown vegetation is scattered and random with some concentrations in the radial drainage ways.

The West Potrillo Mountains SQRU consists of a chain of moderately steep cone shaped and horseshoe shaped (herraduras) volcanic landforms. Landform color is principally dark brown to black with some reddish tones. The vegetation on the lower slopes appears marbled with areas of light and dark green while upper slopes appear more uniformly dark green.

The Indian Basin SQRU describes the southwest part of the West Potrillo Mountains WSA. The sand dunes forming the rim of the Basin are primarily light tan mottled with dark green and gray-green vegetation. From a distance, the basin depression appears uniformly covered with grasses which vary in color from bright greenish yellow to light green, depending on the season.

The fourth SQRU describing the WSAs surrounds the three SQRUs described above. This rating unit consists of flat to gently rolling desert with a Class C rating. The green, tan, and gray colors of creosote, mesquite, yucca, and grasses offer some contrast with the light browns, tans, and orange-browns of the flats and rolling sand dunes.

The West Potrillo Mountains and Mount Riley WSAs fall into a Visual Resource Management (VRM) Class IV.

G. Cultural

There are four known sites in the West Potrillo Mountains and Mount Riley WSAs. One site is a Classic Mimbres pueblo that has been bulldozed; however, some undisturbed material may still remain. This site has the highest concentration of bird bones of any known Mimbres site. There are several undisturbed El Paso phase structures near the middle of the West Potrillo Mountains WSA and one El Paso phase hamlet near the

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southeast boundary of the WSA. The most concentrated and significant cultural resources are in the southwestern portion of the WSAs. They provide information regarding settlement in a very marginal area.

H. Air

Generally, the quality of air within the West Potrillo Mountains and Mount Riley WSAs is good. The air quality in the WSAs does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the WSAs. The Minerals Management Service has classified about half of the West Potrillo Mountains as prospectively valuable for oil and gas. The center of the WSA near the chain of cinder cones and Mount Riley is not considered prospectively valuable for oil and gas. The eastern edge of the WSA within Range 2 West is considered prospectively valuable for geothermal resources.

The best potential for petroleum occurs along the west side pediment and in the valley between the West Potrillo Mountains and the Aden Lava Flow. Much exploration has been done adjacent to the WSAs to better define the possibilities for oil and gas, with some exploration in the volcanics. Tertiary and Quaternary volcanics usually indicate that an area has poor oil and gas potential. The best potential is probably at depth and is related to the Pedregosa Basin or the Overthrust Belt. Although several test wells have been drilled (in T. 28 S., R. 5 W., Section 27, SE1/4 NW1/4 and T. 28 S., R. 5 W., Section 19, SW1/4 SE1/4), results provided little additional information on the oil and gas potential of the West Potrillo Mountains and Mount Riley.

Numerous shallow temperature gradient holes have been drilled and tested east of the West Potrillo Mountains in the vicinity of the Kilbourne Hole Known Geothermal Resource Area (KGRA) east of the WSA. A low temperature geothermal resource does exist in the Kilbourne Hole vicinity. Recent communication with industry (Hunt Energy 1982) indicates that temperature gradients decrease toward the west from Kilbourne Hole. Water temperatures are not hot enough to be considered economically exploitable. Lack of industry interest and decreasing temperature gradients indicate low geothermal potential in the West Potrillo Mountains.

All energy minerals leases let in an area of 80,600 acres in the central part of the West Potrillo Mountains WSA, the West Potrillo Primitive Area, would be covered with a protective stipulation for primitive values (BLM Las Cruces/Lordsburg MFP Amendment/EIS 1983).

2. Non-Energy Minerals

There are no occurrences of locatable minerals known to exist within the WSAs and potential is poor. An Energy and Mineral Resource Evaluation submitted by the Atlantic Richfield Company (1983) rated the WSA as having low intermediate favorability for silver, gold, and zeolites. This rating means that some geologic characteristics are present that are favorable for the accumulation of these mineral resources.

There are currently (microfiche May 4, 1984) 84 mining claims located either totally or partially within the southeast quadrant of the Mount Riley WSA. The claims are part of a large group of claims extending across the northern part of the East Potrillo Mountains. Sixteen of these claims were located prior to the enactment of the Federal Land Policy and

Management Act on October 21, 1976, and are referred to as pre-FLPMA mining claims. The other 68 claims were located after this date and are called post-FLPMA claims.

There are two types of saleable mineral materials in the WSAs; they are cinders and lava rock.

a. Cinders

Volcanic cinders are probably the most important mineral material resource in the West Potrillo Mountains WSA. There are large quantities and variations in color and weight. The market for cinders is in lightweight aggregate, barbecue grill heating media, landscaping, roofing chips, and potting material for indoor horticulture. Red cinders occur in the northern one-third of the West Potrillo Mountains WSA. They bring in a higher price and are more desirable to industry because they require little or no processing before being marketed. Due to the remoteness from market and availability of other sources, the red cinders, in all likelihood, would not be mined. The cinders in most of the cinder cones are of commercial quality, specifically for their color.

One cinder cone in the south-central part of the West Potrillo Mountains WSA was extensively mined in the past under the General Mining Law of 1872. Since 1955, cinders have been classified as saleable minerals and are no longer locatable under the mining laws. There are currently 6 pre-FLPMA mining claims in the West Potrillo Mountains WSA which were located for cinders in 1946. These are the Chaparral claims where grandfathered cinder mining operations are presently being conducted under a Plan of Operations (see Map 13 for location of claims).

b. Lava Rock

Lava rock is used mostly as a decorative stone. The West Potrillo Mountains have some lava rock, but better sources are found in the Aden Lava Flow.

B. Watershed

Water use within the West Potrillo Mountains and Mount Riley WSAs is primarily by livestock and wildlife. There are eight dirt tanks inside the West Potrillo Mountains WSA that utilize surface runoff (see Livestock Grazing). Two small water spreading dikes are also located within the West Potrillo Mountains WSA for erosion control. Additionally, several well facilities and dirt tanks for livestock watering are located at the end of cherry-stemmed roads or just outside the WSAs' boundaries.

The West Potrillo Mountains and Mount Riley WSAs are within the Lower Rio Grande declared underground water basin and ground water use is administered by the New Mexico State Engineer.

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C. Livestock Grazing

1. Allotments

Parts of five grazing allotments are within the West Potrillo Mountains and Mount Riley WSAs. Some areas within the WSAs such as the upper elevations of Mount Riley and the West Potrillo Mountains cinder cones are ungrazed by livestock due to the lack of water, the steep slopes, and the rough and broken terrain in the malpais (lava rock). Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSAs^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSAs	Percent Allotment
POL 3016	83,114	5,688	27,223	33%
Kilbourne Hole 3023	85,488	5,760	10,596	12%
West Potrillos 3029	94,682	8,446	50,327	53%
Mount Riley 3033	75,360	5,448	45,474	60%
Thousand Springs 3039	52,327	5,508	21,485	41%
TOTAL			155,105	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSAs^{a/}

Allotment Name and Number	Type of Development	Location
POL 3016	dirt tank	T. 27 S., R. 4 W., Sec. 26
Kilbourne Hole 3023	interior fence	2 1/2 miles
West Potrillos 3029	dirt tank	T. 27 S., R. 3 W., Sec. 12
	dirt tank	T. 27 S., R. 3 W., Sec. 9
	interior fence	9 1/2 miles
Mount Riley 3033	dirt tank	T. 27 S., R. 3 W., Sec. 8
	water spreaders	T. 28 S., R. 3 W., Secs. 17, 34
Thousand Springs 3039	dirt tank	T. 29 S., R. 4 W., Sec. 4
	dirt tank	T. 28 S., R. 5 W., Sec. 24
	dirt tank	T. 28 S., R. 5 W., Sec. 21
	dirt tank	T. 28 S., R. 4 W., Sec. 23

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

Boundary Fences:

POL 3016 and West Potrillos 3029	3 3/4 miles
Thousand Springs 3039 and POL 3016	7 1/4 miles
Thousand Springs 3039 and Mount Riley 3033	5 1/2 miles
POL 3016 and Mount Riley 3033	6 3/4 miles
Kilbourne Hole 3023 and West Potrillos 3029	5 miles
Kilbourne Hole 3023 and Mount Riley 3033	3 1/2 miles
Mount Riley 3033 and West Potrillos 3029	4 1/2 miles

D. Recreation

Recreational activities in the West Potrillo Mountains and Mount Riley WSAs include off-road vehicle (ORV) use, sightseeing, rockhounding, and hunting.

ORV use occurs on vehicle trails throughout the area and along boundary roads often associated with other recreation activities such as those described below. No motorized cross-country travel is allowed in the West Potrillo Mountains WSA. The WSA was designated as limited to designated roads and trails under an emergency ORV closure on June 4, 1982. The purpose of the emergency closure is to prevent off-road travel on vibroseis lines within the WSA which would hinder rehabilitation of the lines.

Zoological sightseeing opportunities are fair in and around Indian Basin, which is winter habitat for ferruginous, rough-leg, red-tail, and other hawks. Quail, dove, and duck hunting occurs in Indian Basin. Rockhounds look for geodes in the West Potrillo Mountains. The geodes are of volcanic origin and occasionally have crystalline centers.

The 1975 Management Framework Plan (MFP) for the Las Uvas Planning Unit recommended that a study be conducted to determine the value of the central part of the West Potrillo Mountains as a primitive area. The public participation record for the 1975 MFP indicated public support for the study at that time.

Primitive, nonmotorized recreation opportunities are described in Chapter IV, Primitive and Unconfined Recreation.

E. Education/Research

Dr. Reid of the University of Texas at El Paso indicates that R. D. Worthington will start a floristic survey of the West Potrillo Mountains and Mount Riley area to determine what plants are present, how they are disturbed, and what environmental factors influence them. Dr. Paul Minnis has expressed interest in working on a Mimbres site in Indian Basin in the near future.

F. Realty Actions

The Southern Pacific Railroad right-of-way forms the major portion of the southern boundary of the West Potrillo Mountains WSA. The railroad tracks have been removed and parts of the old railroad grade combine with

existing dirt roads to provide access to mining claims and rangeland developments. There have been proposals to upgrade and pave this road known as the Columbus-Anapra road; however, no plans have as yet been finalized.

G. Vegetative Products

An area of approximately 23,040 acres in the vicinity of Indian Basin in the southwest part of the West Potrillo Mountains WSA was identified in the Southern Rio Grande MFP (BLM 1981) as a potential vegetative collection and sale area for yucca, ocotillo, cacti, sotol base, yucca stalks, fourwing saltbush seed, and mesquite.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The West Potrillo Mountains and Mount Riley WSAs generally appear natural. Human imprints affecting the naturalness of the West Potrillo Mountains WSA include dirt tanks, vehicle trails, fences, cherry-stemmed roads, and cinder mining activities. The Mount Riley WSA is virtually pristine with the exception of 4 miles of fence.

Eight dirt tanks are within the boundary of the West Potrillo Mountains WSA. Two-track vehicle trails provide access to seven of the dirt tanks. The remaining tank appears to be accessed by cross-country travel.

A web of 72 miles of vehicle trails cover the West Potrillo Mountains WSA. All of these are two-track with vegetation growing in the center. The trails are generally unnoticeable unless standing directly on or walking along the trails. The trails provide access within livestock grazing allotments, to other allotments, and to rangeland developments.

Forty-eight miles of fence crisscross the WSAs. All have wooden posts and blend in well with the landscape. Vehicle trails run along approximately 20 miles of the fences.

Twelve roads are cherry-stemmed into the West Potrillo Mountains WSA. The two longest cherry-stems penetrate 4 miles into the WSA. Most of the remaining roads penetrate 2 miles or less into the area. Three of these roads enter the WSA from the south, six from the east, and three from the west boundary. These roads provide access to livestock watering facilities and cinder mining activities.

Cinder mining impacts are found in the southern part of the West Potrillo Mountains WSA (see Map 13 for general locations of cinder claims). The cinder mine at Guzman's Lookout Mountain furnished the cinders for the old Southern Pacific railroad bed (now the Columbus-Anapra road) that forms most of the southern boundary of the WSA. The south and southwest slopes of the mountain are heavily impacted. There is no ongoing activity at this site.

Currently, cinder mining is taking place on one of six placer claims 2 1/2 miles southeast of Guzman's Lookout Mountain. These claims were located prior to the passage of the Federal Land Policy and Management Act (FLPMA) on October 21, 1976, and operations are proceeding in the same manner and degree as on that date. A new cut (pit) on the northeast slope of a cinder cone was excavated in August of 1981. At this stage in the mining operations, the mine is screened topographically because of its location and proximity to other cinder cones in the vicinity and the subtle color contrast between the surface and subsurface material renders the mine virtually invisible from a distance.

Three geophysical exploration lines (vibroseis lines) were completed in the northwest and northeast parts of the West Potrillo Mountains WSA in March and April of 1982. The line in the northwest part of the WSA is approximately 5 miles long. The lines in the northeast part of the WSA are approximately 3 and 8 miles long. Reclamation work was done on the lines and their condition is being monitored by the BLM. Vehicular travel is prohibited on the lines (See Chapter III, Recreation). The lines are expected to be substantially unnoticeable by the time the Secretary of the Interior is scheduled to present wilderness suitability recommendations to the President as required by the nonimpairment criteria in the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979).

Several factors mitigate the impacts of the imprints of man described above. First of all, most of the imprints in the West Potrillo Mountains WSA are associated with livestock grazing and their impacts on naturalness are not significant.

Secondly, the vast size of the West Potrillo Mountains WSA in combination with the topographic variation serve to dilute the effects of the imprints. The WSA is, on the average, 12 miles wide (east-west axis) and 20 miles long (north-south axis). Within this vast area, the topography includes playas, sand dunes, and over 48 volcanic cones.

Thirdly, the imprints are distributed throughout the West Potrillo Mountains WSA. For example, the network of vehicle trails roughly divides the WSA into pristine parcels that vary in size from 7,000 acres to 20,000 acres.

The cumulative impacts of human imprints within the West Potrillo Mountains do not greatly affect the quality of overall naturalness in the WSA. Both WSAs generally appear to have been affected primarily by the forces of nature.

b. Solitude

Both the West Potrillo Mountains and Mount Riley WSAs provide outstanding opportunities for solitude. In the Mount Riley WSA, the three separate peaks and the radial drainage ways down the slopes provide topographic screening of visitors. There is some potential for user concentrations in the larger drainages separating Mount Riley and Mount Cox where climbing is less difficult.

Due to the vast size, blocked-up boundary configuration, and varied topography of the West Potrillo Mountains WSA, opportunities to avoid the sights and sounds of others are found throughout the area. Access points into the WSA are numerous and dispersed. This further enhances opportunities for solitude. The quality of solitude opportunities in the West Potrillo Mountains is a major factor in the overall value of the area for wilderness.

c. Primitive and Unconfined Recreation

Outstanding opportunities for primitive recreation in the West Potrillo Mountains WSA include hiking, backpacking, hunting, and geological sightseeing. The large size and blocked-up configuration of the WSA make a 3-4 day backpack through the area possible. The lack of water and rough and rubbly volcanic surfaces make backpacking and hiking somewhat challenging. The variety of volcanic formations (cinder cones with craters, heiraduras, and spatter cones) add geologic interest. The solitude of the area contributes favorably to primitive recreation experiences.

Climbing opportunities exist in the Mount Riley WSA. Although challenging, these opportunities are not considered outstanding.

2. Special Features

The West Potrillo Mountains and Mount Riley WSAs contain special ecological and cultural features of scientific and educational value.

The ecological features include both vegetation and wildlife values. The WSAs provide habitat for a Bureau sensitive plant species proposed for Federal listing, a plant species of special concern to the New Mexico State Heritage Program (NMSHP) (see Chapter II, Vegetation), and an endemic mollusc, Ashmunella rileyensis, which is also listed as an element of concern by the NMSHP. The WSAs are significant for wildlife because of the number of wildlife habitat sites within the areas and the large size of the WSAs (see Chapter II, Wildlife).

The cultural features of the WSAs include Classic Mimbres and El Paso phase sites which would provide information regarding settlement in a marginal area (see Chapter II, Cultural).

Future projects of scientific and educational value planned in this area include a floristic survey of the West Potrillo Mountains and Mount Riley and a study of a cultural site in Indian Basin (see Chapter III, Education/Research).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the West Potrillo Mountains and Mount Riley WSAs as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSAs. Further refinement of the system shows the following vegetation types in the WSAs:

<u>Vegetation Types</u>	<u>Acres</u>
creosote	52,539
Trans-Pecos shrub savanna	61,172
mesquite-acacia savanna	36,165
grama-tobosa shrubsteppe	5,229

b. Distance from Population Centers

The West Potrillo Mountains and Mount Riley WSAs are approximately 1 hour driving time from El Paso, Texas; 1 hour from Las Cruces, New Mexico; 5 hours from Albuquerque, New Mexico; 6 hours from Tucson, Arizona; and 8 hours from Phoenix, Arizona.

B. Manageability

Several factors affect the ability of the West Potrillo Mountains and Mount Riley WSAs to be managed as wilderness in the long-term: state land, private subsurface mineral estate, mining claims and existing mining activities, off-road vehicle (ORV) use, and the size and shape of the WSAs.

State land inholdings total 12,051 acres in the West Potrillo Mountains WSA. Three parcels of private subsurface mineral estate totaling 1,440 acres are cherry-stemmed in the West Potrillo Mountains WSA. A 640-acre inholding of private subsurface mineral estate is located in the Mount Riley WSA. Nonwilderness or incompatible uses on the state land or exploitation of the private subsurface mineral estate could impact the wilderness values of the West Potrillo Mountains and Mount Riley.

At the present time, there are no special uses on the state sections except grazing leases. Although all of the state acreage is leased for oil and gas, very few of the state parcels and one of the private subsurface mineral estate parcels are located in the valley between the West Potrillo Mountains and the Aden Lava Flow, where there may be potential for oil and gas accumulations. The cherry-stemmed parcels of private subsurface mineral estate in the West Potrillo Mountains WSA are not in close proximity and all have existing access. Since the West Potrillo Mountains WSA is so large, the impacts of nonwilderness uses would not have major impacts on the wilderness values or manageability of this WSA. Although Mount Riley is not large enough to absorb the impacts of nonwilderness uses on the private subsurface mineral estate inholding, locatable mineral potential is low and the best potential for oil and gas is north of Mount Riley.

If the West Potrillo Mountains and Mount Riley WSAs are designated wilderness, the state lands and private mineral estate legally described as follows, should have a high priority for acquisition. These lands would greatly enhance the manageability and wilderness values of these areas.

WEST POTRILLO MOUNTAINS AND MOUNT RILEY

Lands Recommended for Acquisition

Legal Description	Acres
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State Land

T. 25 S., R. 3 W.,	Section 32, A11	640
T. 25 S., R. 4 W.,	Section 36, A11	640
T. 26 S., R. 2 W.,	Section 30, NE1/4	160
	Section 32, A11	640
T. 26 S., R. 3 W.,	Section 15, NE1/4	160
	Section 16, A11	640
	Section 26, NW1/4	160
	Section 32, A11	640
	Section 36, A11	640
T. 26 S., R. 4 W.,	Section 2, A11	640
	Section 36, A11	640
T. 27 S., R. 3 W.,	Section 2, A11	640
	Section 16, A11	640
	Section 32, A11	640
	Section 36, A11	640
T. 27 S., R. 4 W.,	Section 1, S1/2 NE1/4	80
	Section 2, A11	640
	Section 32, A11	640
	Section 36, A11	640
T. 28 S., R. 3 W.,	Section 2, A11	640
	Section 16, NW1/4, S1/2	480
	Section 32, A11	640
T. 28 S., R. 4 W.,	Section 2, A11	640
	Section 16, A11	640
	Section 32, A11	640
	Section 36, A11	640
T. 28 S., R. 5 W.,	Section 36, N1/2, N1/2 S1/2	480

TOTAL

14,960

Non-Federal Subsurface (Mineral) Estate

T. 27 S., R. 2 W., Section 16, All	640
Section 32, All	640
T. 28 S., R. 3 W., Section 16, NE1/4	160

TOTAL

1,440

The six pre-FLPMA cinder claims (Chaparral Numbers 1-6) in the south-central part of the West Potrillo Mountains WSA and the 84 mining claims in the southeast part of the Mount Riley WSA could affect the manageability of the area as wilderness in two ways:

- (1) The FLPMA specifies that mining uses that existed on the date of approval of the Act (October 21, 1976) may continue in the same manner and degree during the time that an area is under wilderness review. Such mining uses are grandfathered and may continue even if the uses would impair wilderness suitability.

In addition, mining claimants may be recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976, and the claimant can show BLM that the claim continues to be supported by such a discovery. Valid existing rights convey a more liberal development standard than grandfathered rights in that activities on valid claims are not limited to the same manner and degree. When it is determined that the valid existing rights can be exercised only through activities that will impair wilderness suitability, the activities will be regulated only to prevent unnecessary and undue degradation.

In either of the above instances, the wilderness values in the vicinity of the claims around Mount Riley or the Chaparral cinder claims could be degraded before the area is designated wilderness. Activities on the Chaparral claims are presently proceeding in the same manner and degree under the grandfather clause and are expected to degrade wilderness values in this part of the WSA in the long-term.

- (2) Once an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in the area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the valid existing rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, the wilderness values in the vicinity of valid mining claims could be degraded after the area is designated wilderness.

These Chaparral cinder claims represent a major negative impact on the wilderness manageability of the south-central part of the West Potrillo Mountains WSA since production is presently occurring and it is highly probable that the validity exam required after wilderness designation would confirm that the claims represent valid existing rights.

Another manageability concern is ORV use. There are 72 miles of vehicle trails in the West Potrillo Mountains WSA. Preventing use on these trails after wilderness designation would require signs at a minimum and possibly barriers. If trespass ORV use became a problem, wilderness values such as naturalness and solitude could suffer.

The size, shape, and topographic variety of the WSAs, however, enhance the manageability of the WSAs. As visitor use increases, these areas would be able to absorb the additional visitation without negative effects on wilderness values.

With the exception of the south-central part of the WSA where the six pre-FLPMA cinders claims are located, the West Potrillo Mountains and Mount Riley WSAs could be managed in the long-term to preserve existing wilderness values.

Statement can show that the claim contains a discovery. Valid existing rights, however, are not affected by such a discovery. Valid development standards then grandfathered rights to that activities on valid claims are not limited to the same manner. Grand degree. When it is determined that the valid existing rights can be exercised through activities that will be beneficial without substantially affecting the activities will be designated only as general, summary and value designation.

Within either of the boundaries, the wilderness values in the vicinity of the claims, Mount Riley or the Chisos Mountains, could be designated before the area is designated as wilderness. Activities in the vicinity of claims are presently in overabundance in the management and degree under the grandfathered claims and are expected to destroy wilderness values in this regard of the WSA in the long-term.

Since an area is designated wilderness, the provisions of the Wilderness Act of 1964 and the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the Wilderness Act and the WMP, holders of mining claims validly established in the area prior to the designation of wilderness may develop their claims in accordance with the 1908 "regulations." Although management of public lands under U.S. Mining Law, "Adequacy of the valid expectations of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to avoid unnecessary or undue degradation of the land." Mining operations may impair wilderness values if there are no reasonable alternatives. In certain cases, the wilderness values in the vicinity of valid mining claims could be degraded after the area is designated as wilderness.

These Chisos Mountains claims represent a major sensitive impact on the wilderness manageability of the south-central part of the West Potrillo Mountains WSA. It is probable that the overabundance of mining claims in this high elevation would significantly impair wilderness designation and would confirm that the claims represent valid existing rights.

Another manageability concern is that there are 15 miles of valid claims in the West Potrillo Mountains WSA. If mining were to occur in these areas, the wilderness values would be degraded. The area is a high elevation and contains a number of old, abandoned mines. The area is a high elevation and contains a number of old, abandoned mines.

With the exception of the south-central part of the WSA, however, the manageability of the WSA is not affected by these areas. The area is a high elevation and contains a number of old, abandoned mines. The area is a high elevation and contains a number of old, abandoned mines.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the West Potrillo Mountains and Mount Riley WSAs during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The WSA proposal for these areas was among the ten most commented upon recommendations in the state. Additional data submitted with the public inputs included maps and legal descriptions of developments.

Approximately 43 percent of the personal letters supported further wilderness review of the West Potrillo Mountains and Mount Riley. Supporting comments cited naturalness, outstanding opportunities for solitude and recreation, and geological supplemental values as justification. The area's large size, diverse topography, proximity to large population centers, and dispersed access points were listed as contributing factors to outstanding opportunities.

Approximately 57 percent of the personal letters opposed wilderness review of these two areas. About half of the opposing comments listed resource conflicts such as aggregate minerals, oil and gas potential, geothermal energy potential, and grazing. There was also concern that wilderness designation would "hinder, in the future, the use of the large water basin in these areas by the City of Las Cruces and Dona Ana County and prevent access to the elderly and the handicapped." Other comments listed roads, rangeland developments, and vehicle trails as impacts on naturalness and described opportunities for solitude as less than outstanding due to the outside sights and sounds of the Southern Pacific Railroad, Interstate 10, and the low level crossings of military aircraft.

During the public comment period on the New Mexico Wilderness Supplemental Draft Environmental Assessment (BLM 1983), 31 personal letters, 13 form letters, 1 petition with 15 signatures, and 52 coupons were received indicating support for wilderness designation of the West Potrillo Mountains and Mount Riley WSAs. About half of the personal letters and all of the form letters, coupons, and petition listed no reasons for supporting wilderness designation for these areas. One input questioned the appropriateness of recommending these areas suitable for wilderness designation.

Many of the comments favoring wilderness designation were similar to those made in previous public comment periods; these included "extensive and very wild," "hiking opportunities," and "outstanding scenic, wildlife, botanic, and cultural resources." Several comments addressed the size and boundaries of the area that should be recommended suitable for wilderness. The comment was made that Kilbourne Hole or Phillip's Hole should have been included in the WSAs to complement the geological values of the West Potrillo Mountains and Mount Riley WSAs. Support was also indicated for an area of 205,000 acres, which is greater than the existing WSA acreage. The size and boundaries of the WSAs were determined by land status and the location of roads. Both Kilbourne Hole and Phillip's Hole are separated from the West Potrillo Mountains and Mount Riley WSAs by non-Federal lands and county and ranch roads.

Several comments pertained to BLM's selection of the Amended Boundary Alternative. Only one of the inputs concurring with the amended boundary recommendation included a rationale. This input stated, "The amended boundary will not change the character of the WSA. Its varied topography and unimpaired views will not be disrupted by excluding the area south of Guzman Lookout." The New Mexico Wilderness Study Committee disagreed with the amended boundary, stating, "Removing 8,005 acres seems an unnecessarily large exclusion to eliminate the cinder claims in the southern part...exclusion could be smaller and still not cause management problems." The Committee did not include any alternative amended boundaries with their comments. All but 2 miles of the amended boundary is located on an existing road and a vehicle trail. This boundary was chosen not only to eliminate the cinders claims, but also to simplify on-the-ground identification of the amended boundary.

The importance of the West Potrillo Mountains and Mount Riley in terms of adding diversity to the National Wilderness Preservation System was emphasized in several personal letters. These comments expressed the general idea that as large an area as possible of the southwestern New Mexico desert should be preserved and that these WSAs will become more important as the population centers of the southwest grow. This type of information is documented in the Wilderness Analysis Report (WAR) in Chapter IV and will be analyzed in the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS). The EIS will analyze individual wilderness recommendations in the broader context of other Federal lands already designated or to be recommended as wilderness. The analysis will be based on three factors: (1) expanding the diversity of natural systems and features, as represented by ecosystems and landforms; (2) opportunities for solitude or primitive recreation within a day's drive (5 hours) of major population centers; and (3) balancing the geographic distribution of wilderness areas.

The New Mexico Department of Game and Fish indicated agreement with the Amended Boundary Alternative, but felt a statement should be included that would allow "in the future the development of water, manipulation of habitat, and allow access to department personnel to manage the wildlife resource." At the present time, there are no pending wildlife proposals.

The New Mexico Department of Agriculture's (NMDA) comments stated that the impacts to the range livestock industry for the West Potrillo Mountains and Mount Riley WSAs were inadequately addressed and also that "Manageability concerns, split estate, and resource conflicts in this area are significant enough, in our opinion, to question the appropriateness of the proposed action." The NMDA did not include any additional discussion of this last statement. However, in response to these comments, the impacts to livestock grazing and other resources, as well as the discussion of the area's manageability, have been clarified in this report.

Information submitted by the New Mexico State Heritage Program on the rare mollusc found in these areas and information submitted by industry on mineral potentials have been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 155,105 acres of public land within the West Potrillo Mountains and Mount Riley WSAs would be recommended suitable for wilderness designation. (See Map 13 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, the impacts to wilderness values would be significant because of the added protection of Congressional designation. The impacts on air, education/research, and realty actions were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There has been no energy minerals production in the West Potrillo Mountains WSA. Under the assumptions that oil and gas potential is limited to the valley between the West Potrillo Mountains and Aden Lava Flow and geothermal resources are not economically exploitable, the impacts to the energy minerals industry would be minor in the short-term. The economic benefits forgone to the energy minerals industry would also be minor in the short-term.

Exploration and new leasing for energy minerals would not be allowed under the mineral leasing laws after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential in the WSAs, or for development and production. The energy minerals industry could be affected in the long-term.

Since the potential for locatable minerals within the WSAs is low, there would be no significant impacts to locatables under this alternative. The only current production of minerals within the WSAs is cinders. Extraction of cinders on the Chaparral claims within the West Potrillo Mountains WSA could continue under a wilderness designation if the claims are determined to be valid.

Based on existing information, it appears that wilderness designation would not have a significant degree of impact on mineral resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

A loss of vegetation and soil would result on approximately 600 acres from excavation of cinders on the Chaparral claims (1-6) in the south-central part of the West Potrillo Mountains WSA if the claims are determined to be valid. The loss would not be significant since it represents only 0.4 percent of the total surface area (Federal acreage) of the WSAs.

The restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for most of the existing water, soils, and vegetation in these WSAs, including a Bureau sensitive plant species proposed for Federal listing and a plant species selected by the New Mexico State Heritage Program as a special concern element.

Since existing and proposed BLM plans do not identify any potential uses or activities that could result in extensive surface disturbance, the additional protection for water, soils, and vegetation provided by wilderness designation would not be significant.

b. Wildlife

Under wilderness management, restrictions on surface disturbing and mechanized activities would provide protection for existing wildlife habitat. The restriction of vehicular access would reduce the potential for harassment and poaching of wildlife and could reduce hunting pressure in the area. The excavation of cinders on the Chaparral claims (1-6) in the southern part of the West Potrillo Mountains would degrade wildlife habitat. The added protection of wilderness designation would not significantly impact wildlife.

c. Visual

The majority of the existing visual resources would be protected. The area would be managed as a Visual Resource Management (VRM) Class I, which permits minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

Although visual resources in the southern part of the West Potrillo Mountains WSA in the area of the six cinder claims would be significantly degraded in the long-term, the visual resources in most of the WSAs would not be significantly impacted.

d. Cultural

Wilderness designation could result in increased visitation to the area which could result in more human disturbance of cultural values. However, access to the area would be limited to foot and horseback travel. This would decrease cultural site vandalism by individuals presently gaining access to the area with motorized vehicles. The overall impacts on cultural resources would not be significant.

e. Livestock Grazing

Generally, motorized access on vehicle trails within the designated wilderness would not be permitted. However, if there were no practical alternatives, permits for vehicular access could be authorized for maintenance of the 1 dirt tank on POL (3016), 2 dirt tanks and 3 1/2 miles of interior fence on the West Potrillos (3029), a dirt tank on Mount Riley (3033), and 4 dirt tanks on Thousand Springs (3039). Boundary fences with existing vehicular access include: 4 miles between Thousand Springs (3039)

and Mount Riley (3033), 3 miles between POL (3016) and Mount Riley (3033), and 1/4 mile between Mount Riley (3033) and the West Potrillos (3029). Permits would be required for vehicular access to these fences.

Vehicular access would be restricted on the 72 miles of vehicle trails throughout the West Potrillo Mountains WSA. Use of motorized vehicles on the existing vehicle trails to check cattle would not be permitted. Checking cattle on foot or horseback could have an impact on livestock management and costs.

The impacts of wilderness designation on any one livestock operator would not be significant and would consist primarily of minor inconveniences due to restricted vehicular access.

f. Recreation

Present motorized recreation use patterns would be impacted. Off-road vehicle (ORV) enthusiasts and hunters would not be permitted motorized access on the 72 miles of existing vehicle trails in the West Potrillo Mountains area. The impacts would not be significant since vast areas of public land in the region would still be available for these types of recreation.

g. Vegetative Products

An area of approximately 23,040 acres in the southwest part of the West Potrillo Mountains WSA would not be made available as a vegetative collection and sale area in the long-term. The impacts would not be significant since these types of vegetative products are available elsewhere in the region.

h. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection.

It is highly likely that the six cinders claims in the West Potrillo Mountains WSA would be found valid. Mining operations on the claims would significantly degrade natural values, opportunities for solitude and primitive recreation, and special features in the long-term. The mining operations on these claims would significantly impact the manageability of the extreme south-central part of the WSA in the long-term.

Other manageability considerations could impact the capability of the West Potrillo Mountains and Mount Riley WSAs to be managed as wilderness in the long-term. Nonwilderness uses on the state land inholdings or the private subsurface mineral estate parcels in or near the WSAs could degrade wilderness values. The impacts on wilderness values could be minimal to major depending on the location, type, and extent of development and access requirements. However, extensive development of these parcels is highly unlikely.

At the present time, the West Potrillo Mountains and Mount Riley WSAs, with the exception of the cinder mining claims, could be managed as wilderness.

B. Amended Boundary

Under the Amended Boundary Alternative, 147,100 acres of public land within the West Potrillo Mountains and Mount Riley WSAs would be recommended suitable for wilderness designation (see Map 13 for amended WSA boundary).

The amended boundary would exclude 8,005 acres of public land in the southern part of the West Potrillo Mountains WSA. This boundary adjustment would exclude the six cinder claims (Chaparral Numbers 1-6) from the area recommended suitable for wilderness.

If the area within the amended boundary is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (BLM 1981) as described under the All Wilderness Alternative.

The impacts to wilderness values within the amended boundary would be significant because of the added protection of Congressional designation. The impacts to the following resources within the amended boundary would be insignificant and the same as those described under the All Wilderness Alternative: minerals, water, soils, vegetation, wildlife, visual resources, livestock grazing, nonprimitive types of recreation, and vegetative products. The impacts on air, education/research, and realty actions were clearly insignificant; therefore, they were not discussed.

1. Impacts to Cultural

One El Paso phase hamlet would be excluded from the wilderness area. By excluding the site, it could be subject to increased visitation by motorized vehicles, with an increased chance of vandalism. The impacts to other cultural resources within the WSA are the same as those described under the All Wilderness Alternative. The impacts to cultural resources would not be significant.

2. Impacts to Wilderness Values

The wilderness values and special features within the amended boundary would be provided with significant long-term Congressional protection.

The exclusion of the grandfathered cinder mining claims from the area recommended suitable would significantly enhance the manageability of the designated West Potrillo Mountains wilderness in the long-term.

Nonwilderness uses on the state land inholdings or the private subsurface mineral estate parcels in or near the WSAs could impact wilderness values in the long-term. However, at the present time, development of these parcels appears unlikely and all of the area within the amended boundary could be managed as wilderness in the long-term.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 155,105 acres of public land within the West Potrillo Mountains and Mount Riley WSAs would be recommended unsuitable for wilderness designation.

If the WSAs are not designated wilderness, existing uses would continue and potential uses could be implemented as described in Chapter III.

Under the No Action/No Wilderness Alternative, the impacts to wilderness values would be significant since management of the area would be subject to administrative change in the long-term. The impacts to nonprimitive types of recreation, vegetative products, air, education/research, and realty actions were clearly insignificant; therefore, they were not discussed.

1. Impacts to Wilderness Values

The impacts of the cinder claims on wilderness values in the south-central part of the West Potrillo Mountains WSA would be the same as those described under the All Wilderness Alternative.

The restriction of all vehicles to existing roads and trails would provide some protection for existing natural values, but continued ORV access on the 72 miles of vehicle trails within the WSAs would periodically disrupt solitude in the vicinities of the vehicle trails.

Any energy minerals development and production activities in the area of 80,600 acres in the central part of the West Potrillo Mountains and southern half of Mount Riley would be restricted to protect primitive values.

The wilderness values and special features of the West Potrillo Mountains and Mount Riley WSAs would not be protected through Congressional designation. Since management of the WSAs as specified in land use plans would be subject to administrative change, the impacts to wilderness values could be significant in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The loss of vegetation and soil on the existing cinder claims in the south-central part of the West Potrillo Mountains WSA would be the same as described under the All Wilderness Alternative. Some loss of vegetation would occur in the southwest part of the West Potrillo Mountains WSA if the area is opened for vegetative collection and sales. However, the vegetative sales area would be monitored to ensure sustained yield. The restrictions on cross-country vehicle use throughout the WSAs and energy minerals development and production activities in the central parts of the WSAs would provide protection for the soils and vegetation. The overall impacts to water, soils, and vegetation under this alternative would not be significant.

b. Wildlife

There would be a loss of wildlife habitat in the south-central part of the West Potrillo Mountains WSA impacted by cinder mining. Wildlife could be slightly impacted in the southwest part of the West Potrillo Mountains if the area is opened for vegetative collection and sales. Vehicle use on existing roads and trails would also disturb wildlife. If human presence increases, poaching could increase. The cumulative impacts to wildlife would not be significant.

c. Visual

Both the West Potrillo Mountains and Mount Riley WSAs would be managed as a VRM Class IV, which permits significant change in the basic elements of the landscape as a result of management actions.

In the long-term, extraction of cinders on the Chaparral claims could significantly degrade visual resources in the south-central part of the West Potrillo Mountains WSA under a VRM Class IV. However, the existing Class B scenic quality of the West Potrillo Mountains and Mount Riley would probably be maintained in the short-term since existing and proposed BLM plans do not identify any activities which would impair visual resources in this part of the WSA and because of restrictions on cross-country vehicle use and energy minerals development and production activities. Based on present predictions of future uses and activities in the area, impacts to visual resources would not be significant.

d. Cultural

The chances of damage to cultural resources would slightly increase through continued vehicular access on existing vehicle trails. However, these impacts would not be significant.

e. Minerals

Energy minerals leasing would continue. Vehicle use in connection with exploration activities would be restricted to existing roads and trails. Any energy minerals drilling, development, or production activities in an area of 80,600 acres in the central part of the West Potrillo Mountains would comply with the constraints of the protective stipulation for primitive values. Compliance with the stipulation could result in no surface occupancy areas or restrictions on types and locations of access. Such restrictions could result in additional operating costs for the energy minerals industry. However, the best potential for oil and gas appears to be in the area along the west pediment of the West Potrillo Mountains and the valley between the West Potrillo Mountains and Aden Lava Flow. These areas are primarily outside the 80,600 acres covered by the protective stipulation for primitive values. The cumulative impacts to leasable minerals would not be significant.

Although restriction of vehicles to existing roads and trails could affect prospecting and exploration, since locatable mineral potential is poor, impacts to locatable minerals would be insignificant.

f. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment on existing roads and trails. No impacts to existing livestock grazing management would occur under this alternative.

**SOCORRO
RESOURCE AREA**

APPENDIX N

ANTELOPE WSA (NM-020-053)

I. GENERAL DESCRIPTION

A. Location

The Antelope Wilderness Study Area (WSA) is located approximately 6 miles southeast of San Antonio, New Mexico. The WSA is bound on the west by the Bosque del Apache National Wildlife Refuge and on the east by the White Sands Military Reservation.

The U. S. Geological Survey (USGS) topographic maps covering the WSA are the Cerro Colorado, San Antonio SE, Little San Pasqual Mountain, and San Marcial, New Mexico quadrangles. All four of these maps are at the 7 1/2-minute scale.

B. Climate and Topography

The Antelope WSA is characterized by a semiarid climate with mild winters and hot summers. Average annual precipitation is 8 to 10 inches, with more than half of the moisture occurring during July, August, and September. The average annual temperature is 60°F, with extremes at 50° below zero and 110°F.

This WSA is a rolling desert prairie with elevations ranging from 4,767 feet to 5,065 feet. The foothills of Little San Pasqual Mountain extend into a small portion of the WSA along its southwest boundary.

C. Land Status

The WSA contains 20,710 acres of public land. There are 680 acres of state inholdings within the WSA boundary. (See Map 14 for land status within the WSA boundary.)

D. Access

Access to the WSA is provided by a maintained County road which leaves U.S. Highway 380 approximately 6 miles east of San Antonio, New Mexico. County Road 2113 is the primary access road to the eastern portion of the WSA. A road extends approximately 3 miles along the fence which separates the WSA from the Little San Pasqual Wilderness and provides access to the northwestern edge of the WSA. Unimproved ranch access routes traverse the WSA from east to west in three locations.

MAP 14 ANTELOPE WSA (020-053)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY

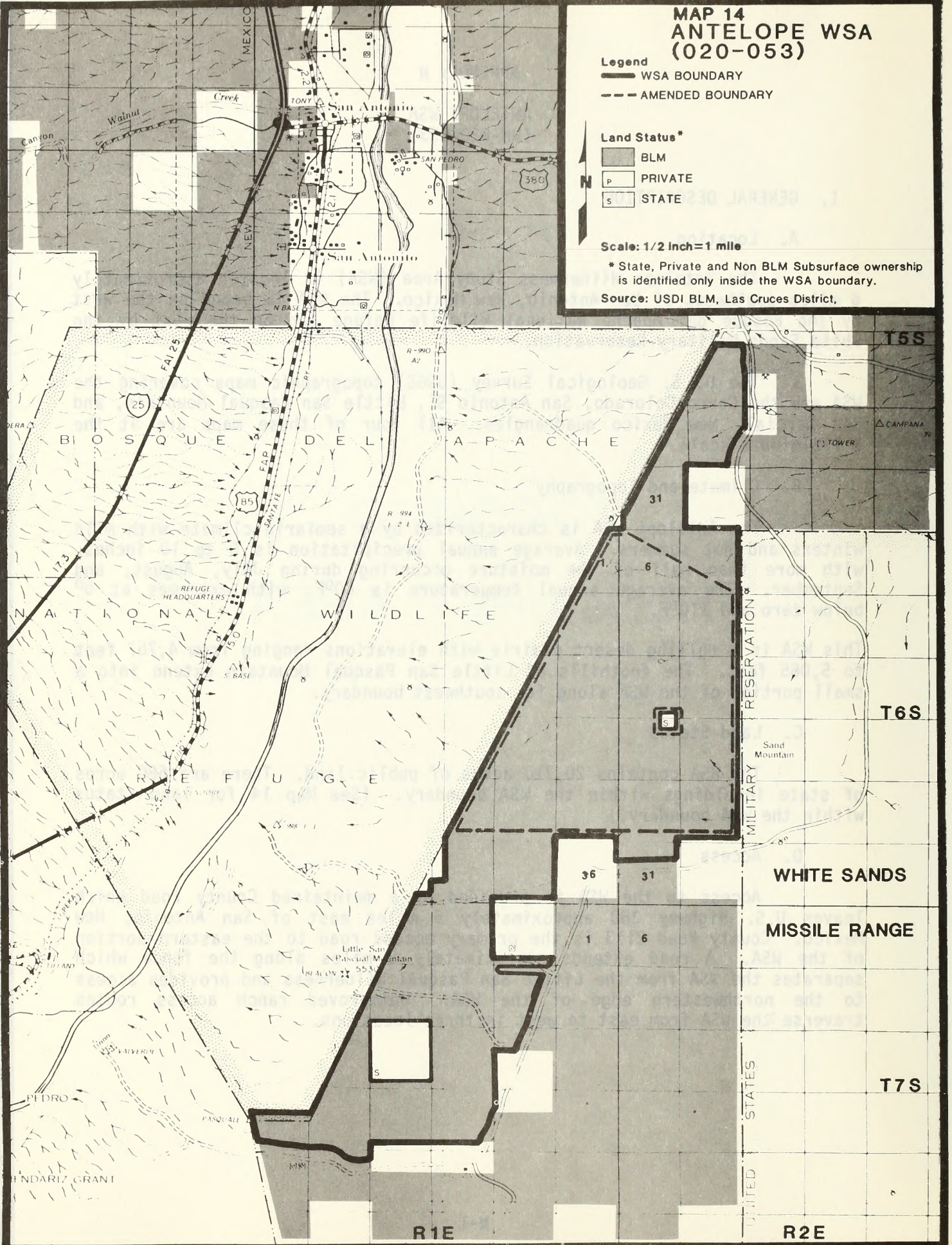
Land Status*

- BLM
- P PRIVATE
- S STATE

Scale: 1/2 Inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District,



II. EXISTING RESOURCES

A. Geology

The Antelope WSA is situated within the Rio Grande Rift and is within the Basin and Range Physiographic Province. Specifically, it is located on the western edge of the Jornada del Muerto Basin. The northern portion of the WSA contains predominantly Tertiary valley-fill sediments of the Santa Fe formation. The southern portion of the WSA contains mostly Quaternary alluvium and bolson deposits, although there is some exposure of Permian San Andres limestone in the extreme southwestern portion of the WSA.

B. Water

The northern part of the Antelope WSA is located in the Rio Grande Basin and the southern half drains into the Jornada del Muerto, a closed basin. Several ephemeral streams drain the WSA; however, because the area is nearly level and has sandy soils which have high infiltration rates, there is little runoff. Ephemeral stream flow occurs in response to summer thundershowers.

Ground water occurs primarily in alluvium and bolson deposits at depths of 55 to 400 feet. It also occurs in the Datil formation, the Manzano group of the Yeso formation, and the Santa Fe group. There are little water quality data available, but what does exist indicates that sulfate levels exceed the recommended limit for livestock and wildlife as established by the National Academy of Sciences (BLM 1980).

C. Soils

Approximately 90 percent of the WSA is characterized by sandy soils on nearly level slopes. Surface textures range from fine sands to fine sandy loams. Subsoil and substratum textures range from sands to loams. There is a small area just east of Little San Pasqual Mountain that has a loamy soil with textures ranging from loam to clay loam. The sandy soils have a very high soil blowing hazard. These soils are well drained and have slow runoff.

D. Vegetation

1. General

The vegetation and associated range sites within the Antelope WSA consist of seven major types:

Vegetation Type	Range Site	Federal Acres
Broom dalea	Deep sand, Sandy	10,312
Sand sagebrush	Sandy	5,022
Creosote	Gravelly, Loamy, Limestone hills	1,637
Mesquite	Sandy, Loamy	1,631
Mid grass	Loamy	993
Yucca	Sandy	836
Short grass	Sandy	279

The broom dalea vegetation type occurs on approximately half of the WSA. This type also includes mesquite, snakeweed, sand sagebrush, and littleleaf sumac. The common grasses are fluffgrass and dropseeds.

The sand sagebrush type occupies about one-fourth of the area. Other common species include yucca, snakeweed, black grama, and dropseeds.

Creosote areas are dominated by creosote, tarbush, and snakeweed. Other shrubs in the creosote vegetation type include Mormon tea and mesquite. Predominant grass species include fluffgrass, threeawns, dropseeds, bush muhly, black grama, and galleta. This vegetation type has a high proportion of annuals; the most common being annual snakeweed, common bahia, buckwheats, spectaclepod, sixweeks grama, sixweeks threeawn, and windmill grass.

The mesquite vegetation type also contains Mormon tea, snakeweed, fourwing saltbush, and sand sagebrush as associated shrubs. Common grasses are black grama, fluffgrass, galleta, and dropseeds.

The mid grass vegetation type is dominated by alkali sacaton in the higher rangeland condition categories, but contains higher proportions of burro grass and snakeweed in the lower rangeland condition categories.

The yucca vegetation type contains soaptree yucca, a tree-like species several meters tall. Other common shrubs are snakeweed and Mormon tea. Black grama, galleta, threeawn, and dropseeds are the most common grasses.

Short grass, the smallest vegetation type, is dominated by black grama in some places and by dropseeds in others. Additional common short grass species are ring muhly, bush muhly, galleta, and threeawns. Scattered individuals of snakeweed, sand sagebrush, and other shrubs can also be found.

2. Threatened or Endangered Plant Species

Spellenberg (1977) and the New Mexico State Heritage Program (1983) do not list any known occurrences of Federal or state-listed plant

species in the Antelope WSA. However, the following species may occur in the WSA.

Species: Coryphantha duncanii

Status: State of New Mexico biologically threatened; Federal candidate species.

Habitat: Limestone hills.

Species: Cryptantha paysonii

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Common in limestone areas associated with gypsum.

Species: Hymenoxys vaseyi

Status: Selected by New Mexico State Heritage Program as a special concern element.

Habitat: Found on Little San Pasqual Mountain in the Bosque del Apache National Wildlife Refuge.

E. Wildlife

The Antelope WSA supports approximately 155 wildlife species, which are comprised of 35 mammal species, 50 reptile and amphibian species, and 70 resident and migratory bird species. The most common wildlife species within this WSA are coyotes, black-tailed jackrabbits, desert cottontails, pronghorn, raptors, and various songbirds.

The Antelope WSA contains two major Standard Habitat Sites (SHS's). These SHS's are described briefly below.

1. Shrub Pediment

The shrub pediment SHS is a mixture of short grass, mid grass, tall grass, and yucca subtypes. Yucca types can be found throughout the SHS with it being a dominant plant aspect wise in some places. The grasses occur mostly in the lower lying edges of the Jornada Plains where disturbance by humans or livestock seem to be most evident. Species diversity appears low for the SHS, possibly due to livestock pressure and lack of good cover.

2. Creosote Hill

The principal areas of the creosote hill SHS are the rolling upland hills east of the Rio Grande. Ground cover is sparse when creosote grows in nearly pure stands. This area has many arroyos that run toward the river.

F. Visual

The WSA is an expansive upper Chihuahuan desert environment characterized by little topographic or landscape diversity. The line of the landform is horizontal; colors are generally tans and muted greens. The Antelope WSA's location in a large desert bolson affords wide vistas of distant mountain ranges to the east and west of the WSA.

The WSA is in a Visual Resource Management (VRM) Class IV.

G. Cultural

A total of five prehistoric sites have been recorded in the Antelope WSA. They consist of lithic and ceramic scatters usually with associated hearths. These sites were located during a survey of three sections of the WSA associated with a Class II survey of the Jornada Resource Area in 1976 and a survey for a proposed pipeline in 1981. Personal communications with individuals who are familiar with the area have revealed a number of unrecorded sites in the Antelope WSA. A multicomponent Paleo-Indian site is located in the eastern portion of the WSA and Archaic sites are located in blowouts and on ridges throughout the WSA. The sand covering the WSA probably conceals numerous sites.

H. Air

Generally, the quality of air within the Antelope WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

a. Oil and Gas

There are no known oil and gas occurrences and no test wells have been drilled within the WSA. Test wells have been drilled 25 miles northeast, 5 miles west, and 20 miles south of the WSA. All of these wells are dry holes. Although the Jornada Basin in general is considered to have low to moderate potential for the occurrence of oil and gas, the WSA's presence within the Rio Grande Rift suggests that any oil and gas that may have been present is now gone because of faulting associated with the Rift. The oil and gas potential in the Antelope WSA is low.

b. Geothermal

Anomalous heat flows and moderate to high geothermal potential are associated with the Rio Grande Rift. However, in the WSA, there is no direct evidence of underlying or proximate magma chambers or other positive geothermal indicators as in the Socorro, New Mexico area to the north. For this reason, the geothermal potential of the area is considered low.

c. Coal

Coal occurs in the Cretaceous Mesaverde formation northeast of the WSA. This area, known as the Carthage Coal Field, is situated on a fault-bound block that has been uplifted and internally fractured. The WSA is on the down-thrown side of a major fault. If coal bearing formations exist in the subsurface of the WSA, they have been faulted down to a depth which would preclude their economic development. The potential for economic coal deposits in the Antelope WSA is low.

2. Locatable Minerals

There is no evidence of locatable mineralization in the WSA. There is a reported uranium occurrence just north of the WSA in T. 5 S., R. 2 E., Section 17. The geologic environment in the WSA is not favorable for the occurrence of mineralization and the potential is low.

3. Saleable Minerals

The WSA does not contain mineral materials that would be considered acceptable for the various construction industries. The potential for development of saleable mineral resources is low due to the absence of suitable material and distance to sources of demand.

B. Livestock Grazing

1. Allotments

Parts of two grazing allotments are within the Antelope WSA. The entire area is suitable for livestock grazing. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Sand Mountain 1285	21,878	1,982	14,090	64%
San Pasqual 1272	13,012	1,860	6,620	51%
TOTAL			20,710	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock and forage condition, availability of livestock water, supplementing salt, and routine maintenance on fences and pipelines. Pickup trucks are used for most of the daily ranch operations in the WSA. Because there are no natural water sources in the WSA, livestock waters must be checked frequently to ensure the availability of water.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Sand Mountain 1285	2 3/10 miles pipeline and 2 troughs	T. 6 S., R. 1 E., Sections 24 and 25 T. 6 S., R. 2 E., Section 19
	2 miles pipeline and 1 trough	T. 6 S., R. 2 E., Sections 5 and 6
San Pasqual 1272	2 miles fence	T. 7 S., R. 1 E., Sections 20 and 21
	1/2 mile pipeline and 1 trough	T. 7 S. R. 1 E., Section 21

Boundary Fence:

Sand Mountain 1285 and San Pasqual 1272 1 1/2 miles

Note: ^{a/}Information shown in tables reflect only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

C. Recreation

Existing recreational use of the area is low because of the WSA's general lack of recreational attractions. Dove and quail hunting accounts for most existing use with some vehicular sightseeing occurring along the improved road along the eastern side of the WSA.

D. Wildlife

The WSA contains one umbrella type game water facility which was installed to provide water primarily for pronghorn.

E. Other

The Antelope WSA is located within the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone established by Memorandum of Understanding (MOU) between the U. S. Army and the BLM in 1973. This MOU specifies periodic evacuation of the Safety Zone and right of access to recover objects which impact in the area due to its proximity to targeting locations within the missile range proper.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Antelope WSA generally appears natural. However, the quality of naturalness is reduced by human impacts inside and adjacent to the WSA.

Human impacts which negatively impact the quality of naturalness within the WSA consist of rangeland developments and vehicle access routes. There are 7 1/2 miles of vehicle routes, 4 8/10 miles of buried plastic pipeline, 4 drinking troughs, and 3 1/2 miles of barbed wire fence inside the WSA.

Human impacts outside the WSA boundaries also affect the feeling of naturalness in the Antelope WSA because of the lack of topographic or vegetative screening. These impacts include: 1 mile of overhead transmission line cherry-stemmed 1 mile into the southeastern portion of the WSA; a large microwave tower adjacent to the eastern boundary of the WSA; large storage tanks, corrals, and windmill towers in two locations on the eastern boundary of the WSA; and 13 miles of barbed wire fence with orange metal posts along the western boundary of the WSA.

b. Solitude

The location of the WSA in an expansive desert environment and the current lack of visitor use in the area compensate for the lack of topographic or vegetative screening and result in opportunities for solitude. Opportunities for solitude are greatest in the central portion of the WSA which is bordered by the Little San Pasqual Wilderness on the west and by White Sands Missile Range (WSMR) on the east. A series of low mountains and sand hills on WSMR provide screening from activities occurring east of this portion of the WSA. The quality of solitude is reduced in the northern and southern part of the WSA by a relatively narrow configuration and the presence of a maintained county road which forms portions of the eastern and southern boundary of the WSA. Traffic along this road, the road which forms 3 miles of the northeastern portion of the WSA, and vehicles used in ranching operations are visible over a wide area of the WSA due to the lack of topographic or vegetative screening in the area.

Low altitude military training flights also impact solitude, but because they are intermittent and of short duration, these impacts would not be significant.

c. Primitive and Unconfined Recreation

Although the WSA offers good dove and quail hunting, opportunities for other types of recreation are limited and opportunities for primitive recreation are not outstanding.

2. Special Features

The WSA provides pronghorn habitat and winter habitat for raptors.



Overview of the Antelope WSA with San Pasqual Mountains in the background.

3. Multiple Resource Benefits

Congressional designation of the area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Antelope WSA as being in the Chihuahuan Desert Province. The potential natural vegetation is grama-tobosa shrubsteppe.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours driving time, Las Cruces, New Mexico lies within 3 hours driving time, and El Paso, Texas within 4 hours driving time of the WSA.

B. Manageability

Factors which potentially affect the manageability of the Antelope WSA include: land ownership patterns, rangeland developments, the presence of the area in the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone, the lack of natural barriers to existing off-road vehicle use, and the character of the opportunities for solitude in the area.

The WSA contains 680 acres of state inholdings. Reasonable access will be granted by BLM to the owners of these inholdings. This access is not expected to result in significant manageability problems.

The western boundary of the WSA is adjacent to the U. S. Fish and Wildlife Service's Little San Pasqual Wilderness and 5 miles of the eastern boundary of the WSA is formed by the WSMR. This enhances the manageability of the WSA by reducing the possibility of conflicting or nonwilderness uses on lands adjacent to the WSA.

In the southeastern portion of the WSA, private and state lands surrounded on three sides by the WSA contain a large windmill, storage tank, and a large corral. There is also an overhead electric transmission line which has been cherry-stemmed approximately 1 mile into the WSA. While these impacts are not technically inside the WSA, because of the lack of topographic or vegetative screening, they affect the naturalness and opportunities for solitude of the southeastern portion of the WSA.

The WSA contains 4 8/10 miles of buried plastic pipeline. Required access to maintain the grandfathered portions of the pipelines and to ensure that livestock drinking tanks contain water would be allowed under wilderness management. These access needs would affect solitude because of the frequency of required access to check on the availability of livestock water. This would affect large areas in the WSA because of the extreme visibility in this featureless desert grassland.

The WSA lies within the WSMR Aerobee 350 Safety Evacuation Zone that must be periodically evacuated during missile firings. The availability of the Safety Zone is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Zone to recover missile debris and pilotless drones. These access needs are not expected to create serious wilderness management problems because the debris, in most cases, could be removed within the constraints of wilderness management. In those cases where recovery impacts wilderness values, the impacts would not be long-term due to the sandy character of the WSA. The military's need to periodically evacuate the area for safety reasons would slightly complicate wilderness management.

The open landscape and existing use patterns in the area would make it difficult to eliminate vehicular use under wilderness management. Dove and quail hunters use the vehicle routes throughout the WSA for access during hunting season. Physically closing vehicle routes would not be effective because of the lack of natural barriers to vehicular travel. If signing and public education failed to alter existing use patterns, it would be necessary to fence portions of the WSA to enforce the prohibition of motorized uses.

Managing the WSA to preserve opportunities for solitude would be difficult because the lack of topographic and vegetative screening and the narrow configuration of portions of the WSA result in impacts to solitude from activities occurring outside the WSA. These activities, primarily normal traffic along County Road 2113 and increased traffic during hunting season, would reduce opportunities for solitude in the WSA.

While these potential manageability problems are not insurmountable, they would require careful monitoring and a significant amount of management attention to ensure that wilderness values are maintained.

A boundary adjustment would improve the naturalness, manageability, and opportunities for solitude in the Antelope WSA. A boundary adjustment excluding the narrow northern and southern portions of the WSA would eliminate the majority of inholdings, access routes, and impacted areas in the Antelope WSA.

V. PUBLIC INVOLVEMENT OVERVIEW

The New Mexico Wilderness Study Area Proposals (BLM 1980) recommended 20,710 acres of the Antelope intensive inventory area as a WSA. During the public comment period on this recommendation, comments were received supporting and opposing WSA status of the area.

Sixteen personal letters favored WSA status of Antelope. These letters were of a general nature and supported WSA status because of the area's naturalness, opportunities for solitude and recreation, and supplemental values. Form letters and petitions received during the comment period listed Antelope as one of the areas supported for wilderness review.

Four personal letters opposed WSA status of Antelope. Two of these letters contained specific reasons why the area lacked outstanding opportunities for solitude. Other supporting reasons included: the area did not appear natural, lack of supplemental values, resource conflicts, and lack of manageability.

After a reevaluation of the Antelope area based on these comments and the area's wilderness characteristics, the BLM released the entire Antelope area from further wilderness review in the New Mexico Wilderness Study Area Decisions (BLM 1980) because it lacked outstanding opportunities for solitude or recreation.

This BLM decision was protested to the BLM New Mexico State Director. The State Director denied the protest and his decision was appealed to the Interior Board of Land Appeals (IBLA).

In reviewing the decision, the IBLA states that the BLM improperly decided not to consider the scenic vistas attributable to the contiguity of the Little San Pasqual Wilderness in determining the opportunities for solitude. The IBLA then reversed the BLM decision denying the protest and remanded Antelope to the BLM as a WSA. As a result of the ruling, Antelope is a WSA and its suitability for wilderness designation was evaluated in the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984).

During the public comment period on the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984), 36 personal inputs with 37 signatures were received which favored wilderness designation of the Antelope WSA. In addition, 29 personal inputs with 42 signatures, 7 form letters with 15 signatures, and 2 petitions with 147 signatures opposed wilderness designation of the Antelope WSA.

Comments favoring wilderness designation most often noted the need to include areas of "open, expansive Chihuahuan Deserts" in the National Wilderness Preservation System, the value of the Antelope WSA as an addition to the adjacent Little San Pasqual Wilderness, and the lack of resource conflicts if the area were designated wilderness. Commentators also stated that the draft report failed to consider boundary adjustments to improve wilderness values and manageability, and that the relationship of the Antelope WSA to the Little San Pasqual Wilderness was inadequately addressed.

The representation of expansive Chihuahuan Desert environments and the need for diversity in the National Wilderness Preservation System will be analyzed on a regional and National basis in the upcoming BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS). The relationship of the Antelope WSA to the adjacent Little San Pasqual Wilderness was not addressed in more detail in the draft version of this report for the following reasons: (1) during wilderness inventory, the U.S. Fish and Wildlife Service (USFWS) had expressed no interest in studying the Antelope WSA for possible inclusion in the Little San Pasqual Wilderness; (2) comments from a Bosque del Apache staff member were instrumental in the initial recommendation that the Antelope unit not be designated a WSA; (3) the USFWS concurred with BLM that nondesignation of the Antelope WSA would have no affect on either whooping cranes or bald eagles along the Rio Grande.

Based on public comments and the position of present management at the Bosque del Apache Refuge that "Antelope would supplement and compliment the Little San Pasqual and act as a buffer to it," the wilderness values of the Antelope WSA have been reevaluated to more fully consider their relationship with the adjacent designated wilderness.

The BLM recognizes that few resource conflicts would result from designation of the Antelope WSA as wilderness. The conflicts that do exist consist primarily of impacts to access by hunters, White Sands Missile Range, and ranch operations; these were not a major factor in the preliminary recommendation for the Antelope WSA.

As noted in the public comments, the draft report failed to consider a logical amended boundary. An Amended Boundary Alternative has been included in this final Wilderness Analysis Report.

Comments opposing wilderness designation of the Antelope WSA primarily noted that the Little San Pasqual was enough wilderness for this part of New Mexico. The issue of balancing geographic distribution of wilderness areas is beyond the scope of this document, but will be considered on a state and regional basis in the upcoming BLM New Mexico Statewide Wilderness EIS.

Many of the comments opposing wilderness designation cited the impacts to ranch operations and impacts to access to the old town site and cemetery at Val Verde, as well as to the Little San Pasqual Wilderness Area. Access to Val Verde would not be impacted by any of the alternatives analyzed in this report because the access routes are outside the WSA. The All Wilderness Alternative would impact access to the Little San Pasqual Wilderness because the two-track vehicle routes which provide access to the eastern portions of the area would be closed. The Amended Boundary Alternative would eliminate these impacts because the area within the amended boundary contains no access to the Little San Pasqual Wilderness Area. The Amended Boundary Alternative would also reduce impacts to ranch operations by eliminating impacts to the San Pasqual allotment and reducing impacts to the Sand Mountain allotment by excluding most ranch access routes from the area within the amended boundary.

Several commentators felt the Antelope WSA was unsuitable because it is "an arid land with no natural water, very little vegetation, hardly any

wildlife, and no recreational attractions." The BLM reached similar conclusions regarding the Antelope WSA in the draft version of this report. It should be noted, however, that the area does generally appear natural and offers opportunities for solitude which are enhanced by its location next to the existing wilderness area.

White Sands Missile Range expressed concern that wilderness designation would conflict with their periodic need to enter the area to recover debris and their use of the area for low altitude training flights. Designation would limit the military's access to the area, but reasonable access could be granted after determining the means that would least impact wilderness values. It is not anticipated that wilderness designation would preclude the use of the area for training flights. The impacts of such flights are intermittent and of short duration and are not considered significant impacts to solitude.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 20,710 acres of public land within the Antelope WSA would be recommended suitable for wilderness designation. (See Map 14 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts to air and education/research would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There are no known occurrences of mineral resources in the WSA and the potential for the discovery of such deposits is low. For these reasons, wilderness designation would not significantly impact mineral development.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, motorized access would be limited to the grazing permittee through restrictions on existing vehicle routes. Vehicular access would be authorized only if there were no practical alternatives. By reducing vehicular use along these existing ways and preventing surface disturbance in the remainder of the WSA, wilderness management would preserve vegetative ground cover and reduce the potential for soil erosion.

Habitat suitable for the occurrence of three plant species listed as special concern elements by the New Mexico State Heritage Program (see Chapter II, Vegetation) would be preserved.

b. Wildlife

Short-term impacts of wilderness designation on wildlife would result primarily from the elimination of vehicular access into the area. This could reduce harassment, poaching, and hunting of game species.

In the long-term, wilderness management would serve to protect and maintain the existing natural values including the natural distribution and abundance of wildlife species in the WSA. Wilderness management would not result in significant alterations of existing habitat conditions in the WSA. For this reason, impacts of wilderness designation on wildlife in the WSA would not be significant.

c. Visual

Existing visual qualities would be preserved. The area would be managed as a VRM Class I which allows minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

d. Livestock Grazing

Grazing is a permissible and compatible activity in wilderness and would continue subject to sound rangeland management. Wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Construction of new rangeland developments would be restricted under wilderness management to those which primarily benefit the natural rangeland values of the wilderness resource. Authorization for vehicular access or for the use of mechanized equipment to maintain rangeland developments would be given only if there were no practical alternatives and would be on a permit basis.

An unauthorized livestock corral in T. 7 S., R. 1 E., Section 21 would be physically removed.

e. Recreation

Wilderness designation would limit the access of dove and quail hunters by closing 7 1/2 miles of vehicle routes. Roads along the boundary of the WSA as well as the road along the powerline which is cherry-stemmed 1 mile into the WSA would remain open. These access points and configuration of the WSA would allow hunters to walk to most areas in the WSA.

f. Cultural

Closing the WSA to vehicular travel and prohibiting significant surface disturbance would provide long-term protection for archaeological sites.

g. Wilderness Values

Wilderness designation would provide the wilderness values present in the Antelope WSA with significant long-term Congressional protection. Wilderness values, especially opportunities for solitude, would be enhanced by the adjacent Little San Pasqual Wilderness Area. Because the Antelope WSA generally lacks topographic or vegetative screening, opportunities for solitude are largely dependent on the size of the area. Both the Antelope WSA and the Little San Pasqual Wilderness are relatively narrow, but in combination, they would create an area of up to 8 miles wide with ample opportunities for solitude. Because the U.S. Fish and Wildlife Service does not allow grazing on the Little San Pasqual, the existing fence would remain in place, and the Antelope WSA and the Little San Pasqual Wilderness would remain distinct areas with different management policies.

h. Other

Wilderness designation would restrict but not preclude entry by WSMR personnel to recover unmanned drones or missile debris in the Aerobee 350 Safety Evacuation Zone which could impact in the area. Reasonable access would be granted after determining the method that would least impact wilderness values.

B. Amended Boundary

Under the Amended Boundary Alternative, 9,892 acres of public land within the Antelope WSA would be recommended suitable for wilderness designation. The remaining 10,818 acres would be recommended unsuitable for wilderness designation. (See Map 14 for amended boundary.)

The amended boundary would improve naturalness for the 9,892 acres by eliminating 2 miles of fence, 1/2 mile of pipeline, 1 drinking trough, 4 1/2 miles of vehicle routes, and 1 mile of cherry-stemmed powerline from the WSA. Impacts on opportunities for solitude would be reduced because portions of the WSA adjacent to maintained roads would be eliminated under this alternative. Manageability would be improved since the amended boundary area would contain only 40 acres of state inholdings and would be bound by designated wilderness on the west and the White Sands Missile Range (WSMR) on the east. Manageability problems resulting from vehicular use by dove and quail hunters would still exist, but would be reduced by eliminating most existing vehicle routes and access points. Under the Amended Boundary Alternative, impacts to access needs by WSMR would be lessened by reducing the size of the area subject to wilderness management. The 9,892 acres of Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe would be permanently preserved as wilderness under this alternative.

Under the Amended Boundary Alternative, the impacts to wilderness values would be significant because of the added long-term protection of the Congressional designation. Impacts to air and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

There are no known occurrences of mineral resources within the amended boundary and the potential for the discovery of such deposits is low. For these reasons, this alternative would not significantly impact mineral development.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Motorized access would be limited on 2 miles of pipeline in the northern portion of the WSA. The pipeline in the central portion of the amended area would be maintained on horseback. By reducing vehicular use on 2 miles of existing routes and preventing surface disturbance in the remainder of the WSA, wilderness management would preserve vegetation ground cover and reduce the potential for soil erosion.

Under this alternative, habitat suitable for the occurrence of three plant species listed as special concern elements by the New Mexico State Heritage Program would not be preserved.

b. Wildlife

Short-term impacts of wilderness designation on wildlife would result primarily from the elimination of vehicular access into the area. This could reduce harassment, poaching, and hunting of game species.

In the long-term, wilderness management would serve to protect and maintain existing natural values including the natural distribution and abundance of wildlife species in the area. Maintenance of these natural values would provide additional long-term protection for intensely managed wildlife habitat in the Bosque del Apache National Wildlife Refuge.

Wilderness management would result in significant alterations of existing habitat conditions in the WSA. For this reason, the impacts of wilderness designation on wildlife inside or adjacent to the WSA would not be significant.

c. Visual

Existing visual qualities would be preserved. The area within the amended boundary would be managed as a Visual Resource Management (VRM) Class I, which allows minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

The area excluded under this alternative would be managed as a VRM Class IV. Although significant changes in the basic elements of the landscape as a result of management actions could be permitted under a Class IV designation, existing and proposed BLM plans do not identify any activities which would impair visual resources. Long-term impacts to visual resources in the excluded area would not be significant.

d. Livestock Grazing

Under this alternative, impacts to livestock grazing would be reduced by excluding one grazing allotment and portions of another from the constraints of wilderness management. By locating the boundary of the amended area along an existing vehicle route, impacts to ranch management would be minimized. The amended boundary contains 2 buried plastic pipelines, totaling 4 3/10 miles, and 3 drinking troughs. Vehicular access or the use of mechanized equipment to maintain 1 1/2 miles of pipeline would be authorized only if there were no practical alternatives and would be on a permit basis. The 2 1/2 miles of pipeline which were constructed during interim management would not be maintained with mechanized equipment. No additional rangeland developments are planned within the amended boundary at this time.

e. Recreation

Vehicular access to eastern portions of the Little San Pasqual Wilderness would not be impacted under this alternative.

Dove and quail hunters would be impacted by eliminating vehicular access along 4 3/10 miles of vehicle routes along pipelines. This would not be a significant impact to recreational use because 4 2/10 miles of vehicle routes in other portions of the area, as well as boundary roads, would continue to provide access for hunters.

Opportunities for primitive recreation on 9,892 acres of Chihuahuan Desert would be permanently preserved under this alternative.

f. Cultural

Closing the area within the amended boundary to vehicular travel and prohibiting significant surface disturbance would provide long-term protection for archaeological sites.

g. Wilderness Values

Wilderness designation would provide the wilderness values present within the amended boundary with significant long-term Congressional protection. In combination with the adjacent Little San Pasqual Wilderness, this would increase the amount of Chihuahuan Desert grassland designated as wilderness from 20,092 acres to 29,984 acres. This would enhance opportunities for solitude since existing opportunities in this relatively flat and open area are dependent more on the size of the area than on topographic or vegetative screening.

Because the U.S. Fish and Wildlife Service does not allow grazing on the Little San Pasqual, the existing fence would remain in place and the Antelope WSA and the Little San Pasqual Wilderness would remain distinct areas with different management policies.

h. Other

Wilderness designation of the amended boundary area would restrict, but not preclude, entry by WSMR personnel to recover unmanned drones or missile debris in the Aerobee 350 Safety Evacuation Zone which could impact in the area. Reasonable access could be granted after determining the method that would least impact wilderness values.

By reducing the acreage subject to wilderness restrictions, impacts on access needs by WSMR would be reduced.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 20,710 acres of public land within the Antelope WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable use of the area would be continued livestock grazing.

Under the No Action/No Wilderness Alternative, the impacts to air, cultural resources, education/research, wildlife, and vehicle dependent recreation would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Antelope WSA would not be provided with long-term Congressional protection. Since existing and proposed BLM plans do not identify any activities which would significantly impact natural values, the area would retain its generally natural character in the short-term. Opportunities for solitude would be impacted by continued vehicular access for ranch operations and by use during hunting season.

The Antelope WSA's location in an expansive desert environment and sweeping vistas of surrounding landscapes are important contributors to the feeling of naturalness and solitude inside the WSA. Under this alternative, these circumstances would not change and therefore, would not significantly impact wilderness values.

In the long-term, rangeland management activities and continued vehicular access could impact the naturalness of the WSA through the creation of additional rangeland developments and access routes. These impacts would not significantly alter the existing situation in the WSA nor would they impact the adjacent Little San Pasqual Wilderness.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Vehicle routes in the WSA would remain open to motorized access. Surface disturbing activities would be allowed subject to environmental analysis.

The impacts to water, soils, and vegetation including three plant species listed as special concern elements by the New Mexico State Heritage Program would not be significant.

b. Visual

Although significant changes in the basic elements of the landscape as a result of management actions could be permitted under the existing VRM Class IV designation, existing and proposed BLM plans do not identify any activities which would impair visual resources. Impacts to visual resources in the long-term would not be significant.

c. Other Resources

There would be no impacts to mineral resources, livestock grazing, and the WSMR Aerobee 350 Safety Evacuation Zone.

APPENDIX O

CONTINENTAL DIVIDE (NM-020-044)

I. GENERAL DESCRIPTION

A. Location

The Continental Divide Wilderness Study Area (WSA) is located in west-central New Mexico. It lies in Catron County, south of the Plains of San Agustin, approximately 29 air miles south of Datil. The WSA name is derived from the fact that the area is bisected by the Continental Divide.

The U. S. Geologic Survey (USGS) topographic maps covering the WSA are the Fullerton, Paddy's Hole, Mojonera Canyon, Rael Canyon, O Bar O Canyon, Indian Peaks West, and Pelona Mountain quadrangles. All of these are New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

The WSA has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September during brief, but often heavy thundershowers. Winter is usually the driest season. Annual precipitation averages about 14 inches over the entire WSA, with the lower elevations averaging 12 to 13 inches and higher elevations 16 inches. Average annual snowfall is 2 to 3 feet in most localities.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperatures as low as -28°F have been recorded. Mean annual maximum and minimum temperatures for the area are 63° and 26°F, respectively. The frost-free season lasts nearly 90 days in those elevations above 7,000 feet.

The prevailing winds over the WSA are from the southwest. Spring and summer winds of high intensity are common.

Pelona Mountain, at 9,212 feet, is the highest point in the WSA. Elevation differences range up to 2,400 feet with the lowest elevations (6,785 feet) occurring on the western edge of the WSA. The Continental Divide runs east-west through the WSA.

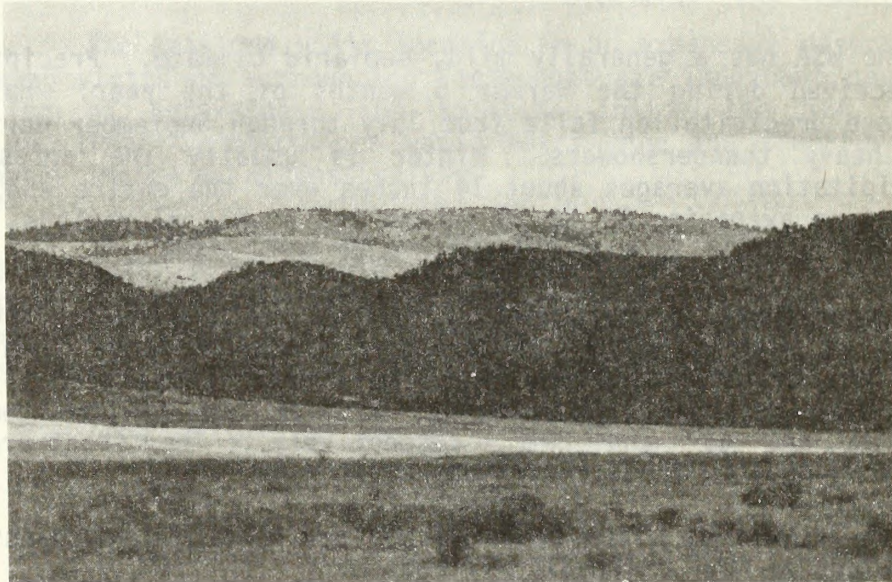
Pelona Mountain has three major drainages: Railroad Canyon drains to the south; Cottonwood Canyon courses west; and Shaw Canyon drains to the north. The northwestern portion of the WSA is characterized by rugged canyons and rough, hilly country. To the south and east of Pelona Mountain stretch extensive, rolling short grasslands.

C. Land Status

The Continental Divide WSA contains 68,761 acres of public land. There are 1,680 acres of private land and 3,420 acres of state land inholdings in the WSA (see Map 15 for land status).

D. Access

The WSA may be reached by State Highway 78 and from State Highway 12 via County Roads B019 and C016. From these maintained roads, it is necessary to take unmaintained two-track ways into the WSA. Major access routes are through Shaw Canyon in the north, Cottonwood and West Canyons in the west, and through the Adobe Ranch into the southern and western portions of the WSA. All these routes cross private land. The acquisition of an easement across these private lands would be required to ensure legal access into the WSA. Access from the north has been restricted by the landowner.



Cottonwood Canyon in Western Portion of the WSA.

**CONTINENTAL DIVIDE WSA
(NM 020-044)
MAP 15
Legend**

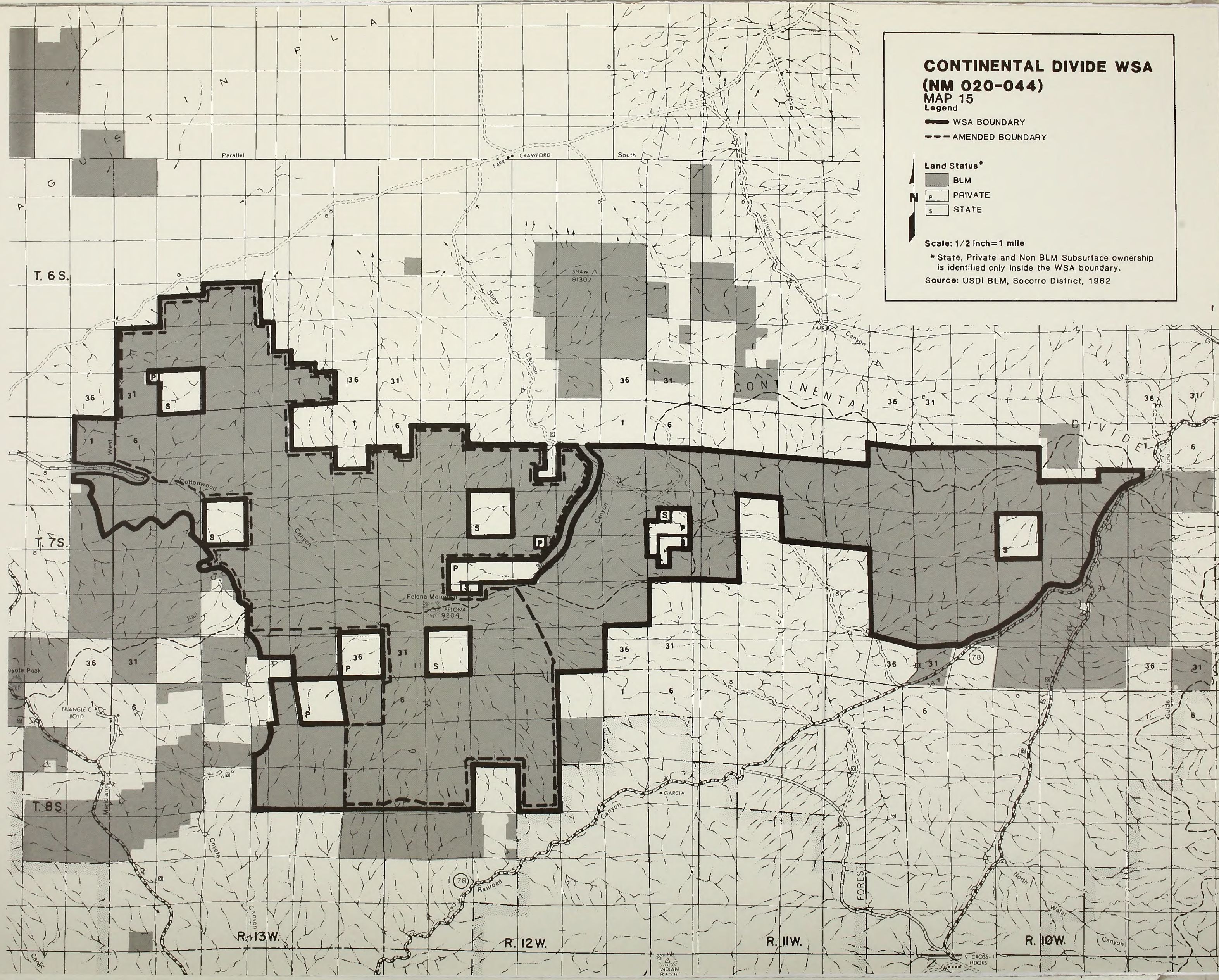
— WSA BOUNDARY
--- AMENDED BOUNDARY

Land Status*
■ BLM
□ P PRIVATE
□ S STATE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership
is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982



II. EXISTING RESOURCES

A. Geology

The Continental Divide WSA is located within the Datil-Mogollon Volcanic Plateau. This area is transitional between the Basin and Range Province and the Colorado Plateau. The Plains of San Agustin have many features typical of a classic block-faulted, Basin and Range valley. The major geologic feature encompassed by the WSA is Pelona Mountain, a composite strato-volcano of basaltic to andesitic composition. Pelona Mountain is one of a series of Tertiary volcanic features which surround the southwestern portion of the Plains of San Agustin. Apart from some minor Quaternary alluvium, the rocks exposed within the WSA are confined to rhyolitic and andesitic flows and tuffs of the Mid-Tertiary Datil Formation, unnamed late Tertiary andesitic to basaltic flows, and volcanic sandstones and conglomerates of the Early Quaternary Gila conglomerate. Outcrops along Rail and Cottonwood Canyons exemplify the sequential nature of these rock formations. A small uplift at the foot of Horse Mountain to the northwest of the WSA and a deep well drilled near the center of the Plains of San Agustin suggest that sandstones and limestones of Cretaceous, Triassic, and Permian age lie beneath the volcanic pile comprising Pelona Mountain. The deep well also suggests that the Mesozoic and Paleozoic rocks unconformably overlie deep Precambrian Gneiss.

B. Water

The Continental Divide WSA is located on the southern boundary of the Plains of San Agustin, a closed basin with interior surface water drainage. While no permanent streams or surface water bodies exist on public land in the WSA, a cienega which has been developed to provide water for livestock is located on private land at the base of Pelona Peak. Many of the alluvial arroyos and canyons, which drain from high mountains, contain runoff during the more intense storms. This runoff usually disappears quickly into alluvium along the border between mountains and lowlands. Occasionally, small water bodies exist in depressions in basin floors until they evaporate or infiltrate.

The principal aquifer in the area is formed by the Quaternary age bolson deposits. Some water may be present in the small patches of Gila conglomerate and Quaternary alluvium, which are widely scattered in the area. Large amounts of ground water are present beneath the adjacent Plains of San Agustin area, as it is within a closed drainage basin. The depth to water in the area ranges from less than 50 feet to 500 or more feet in the higher mountainous areas. Only limited water quality data are available in the area as no wells are monitored on a regular basis. Analysis of water from a well in the Plains of San Agustin, which is very near to and typical of ground water in the WSA, indicates that the water is suitable for livestock purposes.

C. Soils

Approximately 75 percent of the WSA has soils that are shallow to moderately deep over bedrock. The bedrock is basalt, tuff, or volcanic conglomerate. Rock outcrop is common in the area. Soils are generally loamy to clayey and commonly have rock fragments throughout.

Erosion is not serious on any of the soils that are gently sloping, due to the protective rock fragment cover. There is a sizable area on the western portion of the WSA that would be very susceptible to water erosion due to the steep slopes. Wind erosion would not be a problem anywhere in the WSA.

D. Vegetation

1. General

In the Continental Divide WSA, the following Standard Habitat Sites (SHS's) are present:

Ponderosa-Pinyon Mountain (4,945 acres)

The Ponderosa-Pinyon Mountain SHS in the WSA is dominated by ponderosa pine. There are a few areas of Douglas fir which are usually in north-facing drainages or on north-facing slopes in the higher elevations. Limber pine is scattered at the highest elevations. The coniferous forest type is usually found at the higher elevations in the WSA on the north- and west-facing slopes with a mixture of pinyon pine, alligator juniper, and one-seed juniper also occurring on southern and eastern slopes. This type has an understory of gray oak, Gambel's oak, mountain mahogany, snow berry, wax current, and buck brush; some traces of elderberry and wild rose are also found in drainage bottoms. Cool-season grasses found in this SHS are Junegrass, fringed brome, mutton grass, Arizona fescue, pine dropseed, and timber oat grass. Of these grasses, mountain muhly, mutton grass, and Junegrass are the most common. Pinyon pine is found throughout the understory of this type, occurring generally as young saplings. Frequency of its occurrence is high in the large transition zones between this and the other types. Animals that can be found in this SHS include mule deer, wintering elk, gray foxes, golden eagles, turkey vultures, red-tailed hawks, and great horned owls. Other animals that can occasionally be found include black bear, mountain lions, bobcats, and bald eagles.

Blue Grama-Snakeweed Hill (52,704 acres)

This SHS is found principally on the southern and eastern portions of the WSA plus a large area on the high plateau in the center of the WSA spreading northwest and southwest from Pelona Mountain. The grassland is dominated by blue grama. Wolftail is associated with blue grama over most of the WSA. Other grasses found in lesser amounts are squirreltail, needle and thread, and black grama. The most common shrubs found mainly in the swales and drainages of this type are broom snakeweed, Apacheplume, rubber rabbitbrush, fourwing saltbush, and winterfat. Common animals in this SHS include black-tailed jackrabbits, coyotes, kit foxes, pronghorn, red-tailed hawks, and golden eagles.

Pinyon-Juniper Hill (11,112 acres)

The Pinyon-Juniper Hill SHS usually lies just below the Coniferous Forest type in elevation and intermingles with the Coniferous Forest type in a transition zone. This type predominates on southern and eastern slopes and ridge tops where soils are shallow and undeveloped. It

is characterized by an overstory of chiefly pinyon pine, alligator juniper, and one-seed juniper. The major understory species associated with the pinyon-juniper include mountain mahogany, oak, rubber rabbitbrush, globemallow, blue grama, and sunflower. The most common grass is blue grama with sideoats grama and western wheatgrass found in the better sites. In addition to mule deer, the SHS provides a seasonal use area for wintering elk on Pelona Mountain. Other mammals common to this SHS include desert cottontails, cliff chipmunks, porcupines, rock squirrels, bobcats, and mountain lions. Bird species common to this SHS include the fly catcher, vireos, sparrow, nighthawk, warbler, raven, flicker, and woodpecker.

2. Threatened or Endangered Plant Species

No threatened or endangered plant species have been recorded from this area. However, the WSA does contain habitat which offers potential for the occurrence of 17 species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Continental Divide WSA supports approximately 309 wildlife species. These include 59 reptile/amphibian species, 75 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species for the Continental Divide WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the SHS discussion in the Vegetation section.

2. Threatened or Endangered Fauna Species

The WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federally endangered species. Wintering bald eagles are known to occur in the WSA.

F. Visual

The Continental Divide WSA contains two basic visual landscapes: a vast expanse of rolling grasslands and a forested environment characterized by steep canyons and broad ridges. They have been rated as Visual Resource Management (VRM) Classes IV and II, respectively.

The vast expanse of smooth rolling hills which extend to the east and south of Pelona Mountain also creates a dramatic visual landscape. The pastel browns, greens, and yellows of the rolling hills are backdropped by blue mountains and extend for several hundred square miles with few human structures in evidence except for occasional fences, roads, and windmills.

The area west and northwest of Pelona Mountain is a rugged landscape which exhibits the diversity of color, vegetation, relief, shape, and geology common to the pine-forested mountains of the region. Numerous

vantage points which exist along ridges and other high points in this portion of the WSA offer spectacular vistas. Views from the 1,200-foot escarpment along the western edge of the WSA extend across the Plains of San Agustin and encompass much of west-central New Mexico.

G. Cultural

A total of 11 sites have been recorded: nine historic homesteads or associated historic features, one historic grave, and one prehistoric site. Bat Cave (on the National Register of Historic Places), when excavated in the late 1940's, was reported to contain the earliest occurrence of maize in North America. This conclusion has been questioned by some researchers. It is hoped that testing at Bat Cave by the University of Michigan (summer of 1981) will resolve the question of such early dates.

H. Air

Generally, the quality of air within the Continental Divide WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

The U.S. Geological Survey (USGS) has classified the northern and southern fringes and the eastern extension of the WSA as being prospectively valuable for oil and gas. Despite this classification, the local volcanic activity, and the poor results of oil and gas wildcats in the region, it is doubtful that economic oil and gas resources are present beneath the WSA.

The eastern portion of the WSA that lies within T. 7 S., R. 10 W. is entirely leased for oil and gas. The two noncompetitive leases which encompass this portion of the WSA are post-Federal Land Policy and Management Act.

No oil and gas exploration wells have been drilled within the WSA. The closest exploration well to the WSA was a 12,284-foot dry wildcat well within the Plains of San Agustin, approximately 35 miles northeast of Pelona Peak. This dry well suggests that a sequence of possible petroleum source and reservoir rocks (Cretaceous, Permian, and Mississippian in age) lie below the volcanics comprising Pelona Mountain. Within this region, a few oil and gas wells have tested this sequence with negative results. The majority of the WSA could probably be leased noncompetitively, but it is doubtful that any future exploration would occur within the WSA unless some encouraging wells were drilled within the region.

Geothermal anomalies associated with Pelona Mountain are not of enough significance to attract any serious attention. Much more significant anomalies exist near more populated areas.

2. Locatable

Although no occurrences of base metal mineralization have been identified within the WSA, the geologic environment is favorable for tin deposits. The rhyolitic flow unit of the Datil formation, which either outcrops on or underlies most of the WSA, is the host rock for tin deposits within the Taylor Creek Mining District. The northernmost extent of known significant tin mineralization is along Squaw Creek, approximately 12 miles southeast of Pelona Peak. Anomalously high tin values have been reported in a stream sediment sample 6 miles east of Pelona Peak. This anomalous sample was taken within 2 miles of the WSA's border and from a stream whose origin is within the WSA. This sample was taken as part of the Geology, Energy, and Mineral Resources Assessment of the San Agustin Area performed by Geoexplorers International, Inc. (1982). The conclusions reached as a result of this assessment indicate that the WSA provides a low to moderately favorable environment for tin.

Other base metal and precious metal mineralization could exist but no direct or strong indirect evidence exists to support this inference. In general, the geologic environment has low favorability for economic precious or base metal mineralization.

Uranium and thorium mineralization is often associated with volcanic deposits. Despite this relationship, regional information suggests a low favorability for the discovery of economic uranium or thorium deposits.

There has been very little recorded exploration for locatable minerals within the WSA. Four mining claims were located and drilled by Noranda Exploration Inc., but were abandoned as of December 1981. These four claims were located within the southernmost portion of the WSA's eastern extension. It is assumed that these claims were located in hopes of discovering tin or uranium mineralization within the Gila conglomerate.

Presently, three claims (located in August 1981) lie within the central portion of the WSA. No evidence of discovery was noted during a recent cursory examination of the claims. It is assumed that these claims are locations for precious metals. If economic conditions encouraged the exploration and possible development of known tin deposits within the Taylor Creek Mining District, peripheral areas such as Pelona Mountain would become of great interest. Under such a situation, the Pelona Mountain area could be subject to geochemical sampling, wholesale claiming, and eventually, test boring. The possibility exists that a large, low-grade tin deposit could be developed.

3. Saleable

Numerous outcrops of basalt and rhyolite (including pumiceous tuffs) occur within the WSA. The rock is of sufficient quantity and quality to be used as construction aggregate or for decorative purposes.

No material sales or free use permits have been issued within the WSA. Considering the sparse population of the vicinity, as well as the lack of nearby public roads, it is doubtful that any demand would exist for the common variety materials within the WSA.

B. Watershed

The Continental Divide WSA contains two watersheds: North Divide and South Divide. All lands in the watersheds are classified as productive acres. There have been no projects for land treatment or erosion control except for a prescribed burn in November 1981, a small (5 acres) tree-planting project near the head of Cottonwood Canyon, and snag felling of timber. No areas within the WSA are in the severe erosion classification. Runoff over the area averages 1 inch per year with erosion amounts of 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

The boundary of the WSA includes portions of five grazing allotments. The Y Ranch and Paddy's Hole allotments graze yearlings in the WSA from April 15 until October 15. Shaw Canyon allotment grazes cows/calves in the WSA from April 15 until October 15. The beginning and ending dates of the above grazing periods may vary depending on weather conditions such as the presence or absence of snow. The Coyote Canyon and

Adobe Ranch allotments run cow/calf operations. Grazing use varies during the year based upon availability of forage and the type of grazing system in use on the allotment.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Coyote Canyon	11,986	2,448	4,280	36%
Y Ranch	24,199	3,993	13,299	55%
Shaw Canyon	38,233	6,936	29,882	78%
Paddy's Hole	4,480	852	1,720	38%
Adobe Ranch	28,158	7,200	19,580	69%
TOTAL			68,761	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock conditions and forage conditions, supplementing salt or protein, availability of livestock water, breaking ice on livestock waters, and performing normal maintenance on fences, dirt tanks, and pipelines. Pickup trucks are used for most of the daily ranch operations in the WSA. Normal maintenance of various rangeland developments is performed using motorized vehicles such as a pickup truck and bulldozer to clean the dirt tanks.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Coyote Canyon	6 miles of boundary fence 2 dirt tanks
Y Ranch	3 miles of interior fence 9 miles of boundary fence 6 dirt tanks
Shaw Canyon	11 dirt tanks 1 5/10 miles of fence 19 miles of boundary fence
Paddy's Hole	2 miles of boundary fence
Adobe Ranch	10 miles of interior fence 9 dirt tanks 5/10 mile of pipeline

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

Potential livestock grazing in the WSA could increase with additional rangeland developments needed to intensify grazing management. The type and location of these developments have not been specifically identified at this time.

D. Timber Harvest

Forest resources in the WSA consist of an estimated 9.1 million board feet of ponderosa pine and 15,070 cords of pinyon-juniper firewood. Presently, there is no authorized use of the forest resources in the WSA.

Past use of the area included three timber sales. The last sale was held in 1960. These sales removed a total of approximately 4.5 million board feet of timber from 2,500 acres. Many of the cut trees were left in place when it was realized that the operation had become uneconomical. Small sales of Christmas trees took place in the area north of Pelona Peak. Very little of the pinyon-juniper type has been utilized for wood products.

Future commercial use of the forest land on Pelona Mountain would be the utilization of the timber stands by selective cutting to clean out the mature decadent age classes. Sanitation harvesting and other silvicultural prescriptions, primarily controlled burns and natural fires, would be important applications for the commercial ponderosa stands to promote regeneration opportunities if the stands are to be maintained or improved, and utilized. The present stand conditions represent a declining trend in the succession of a ponderosa forest. If no management is applied to these stands, most of the ponderosa stands in the WSA would be eliminated over the next 200 years as a result of past harvesting methods, a general lack of reproduction, grazing pressure, lack of wild fires, low stand vigor, and an ever increasing encroachment of the pinyon-juniper type.

The importance of the commercial timber resources on Pelona Mountain is potentially significant, both for its diversity and its volume. Presently, however, the site for ponderosa is marginal, access is difficult, and harvesting feasibility is questionable. The impact of the timber in the WSA, if offered to the local economy, would be insignificant compared to the volumes that come from the Gila National Forest land. However, this significance could increase in the future if wood demands escalate.

E. Recreation

Current recreational use is limited primarily to big game hunting for deer, pronghorn, and occasionally elk, bear, and lion. Off-road vehicle (ORV) use associated with hunting and possibly some exploring are the only recreational ORV uses known to occur. Bat Cave is an archaeological site of such significance that it draws sightseers and interested groups. Occasionally, backpackers and sightseers use the area. Other recreational uses in the area are presently limited by the low levels of public knowledge of the area, the distance from population centers, and the lack of legal access.

The area offers a high potential for backpacking, hiking, hunting, camping, horse packing, nature photography and study, and varied forms of sightseeing.

The Continental Divide crosses Pelona Mountain and presently attracts a few hikers following the route of the Continental Divide National Scenic Trail (CDNST). Should the CDNST actually be routed through the WSA, use would undoubtedly increase. Future use on trail segments across the WSA would probably be less than 100 hikers a year.

F. Education/Research

Bat Cave has been the site of important research into the early domestication of maize in North America. It represents one of the most significant opportunities for archaeological research in the Southwest.

Opportunities for environmental education exist based on the diversity and abundance of wildlife, vegetation, geology, and cultural resources present in the WSA. The distance from population centers, however, will probably limit the direct use of the area for environmental education.

G. Native American

There are no known current or potential Native American religious sites within the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land withdrawn within the WSA.

I. Wildlife

A wildlife habitat management plan (HMP) developed for the area is designed to improve and protect habitat for bald eagles, mule deer, pronghorn, elk, Merriam's turkeys, tassel-eared squirrels, harlequin quail, and cavity nesting birds. The objectives of the plan are to create more roosts, water sources, and prey species for bald eagles, and to produce more forage for elk, mule deer, and pronghorn. Actions proposed in the plan include prescribed burns (interseeding with 40 percent grass, 30 percent forbs, and 30 percent browse), construction of nine wildlife waters, and fencing off some reservoirs from livestock use. When implemented, it will increase the potential of the area as wildlife habitat.

The area has not been identified by the New Mexico Department of Game and Fish (NMDGF) for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Continental Divide WSA generally appears natural. The feeling of naturalness in the WSA is enhanced by its large size and topographic variation. Ponderosa pine and pinyon-juniper woodlands cover much of the northwestern third of the WSA and provide a high degree of vegetative screening. These factors reduce the impacts of rangeland developments, vehicle routes, and evidence of past logging in the WSA.

This 68,761-acre WSA contains approximately 45 miles of vehicle routes which vary in nature from washed out logging roads to regularly used ranch access routes. Most of the logging roads have not been regularly used since logging operations ceased in 1960; some of these roads are returning to their former condition. Others have become access routes for ranch operations and have been maintained by the passage of vehicles. Other routes in the WSA have been created to provide access to rangeland developments and pastures on both public and private lands.

Other impacts on the area's naturalness include 28 dirt tanks and 51 miles of fences. The impact of these rangeland developments upon the naturalness of the WSA varies with the type of terrain in which they are found. In the rolling, grassy areas of the WSA, the lack of vegetative screening extends the visual impacts of rangeland developments over a wider area. Portions of the WSA north and west of Pelona Mountain are forested and many rangeland developments are generally not noticeable. However, some impacts are apparent because of the visibility afforded by ridgelines and other topographic features.

Human impacts in the forested areas west and north of Pelona Mountain include old logging roads, and downed timber and stumps left from past logging activity which covered approximately 2,500 acres. The logging operation abruptly ended as some trees were cut and never removed. The impacts of these past human activities are becoming less evident, through natural processes, with the passage of time and do not significantly affect the naturalness of the WSA.

The large size, and topographic and vegetative screening present in the WSA mitigate the human impacts on naturalness and the WSA generally appears natural.

b. Solitude

The remote location and topographic variation in the Continental Divide WSA offer outstanding opportunities for solitude.

These opportunities are reduced slightly in the rolling grassland sections of the WSA where the open character of the landscape and the lack of vegetative screening increase the area affected by other human

activities. Human activities in the area consist primarily of motorized access in support of ranch operations and hunters during hunting season.

Portions of the WSA north and west of Pelona Mountain are forested and this vegetative screening provides a high degree of solitude. There are existing ranch operations requiring motorized access in this area, but the topographic and vegetative screening present would reduce the significance of their impacts.

c. Recreation

Primitive recreation opportunities are highest in the forested, mountainous area in the northwestern portion of the WSA. These opportunities include hunting, various kinds of sightseeing, hiking, and camping. Deer and pronghorn hunting account for most of the current recreational use in the WSA. The varied topography, vegetation, wildlife, and the scenic vistas found in the area provide good sightseeing opportunities. Hiking and camping opportunities are also considered good in the forested parts of the WSA. These opportunities would be enhanced in the future if the proposed Continental Divide National Scenic Trail is routed through the WSA.

The Continental Divide WSA provides outstanding opportunities for primitive and unconfined recreation.

2. Special Features

Wildlife, archaeological, and scenic values are the Continental Divide WSA's most significant special features. The remote, undeveloped character of the region and the diverse vegetation and landforms result in a wide variety of wildlife in the area. The southern and eastern portions of the WSA provide excellent pronghorn habitat. Forested portions of the WSA support a moderate mule deer population as well as mountain lion, black bear, turkey, and wintering elk. Eagles, including at least four wintering bald eagles, are also found in the WSA.

Archaeological sites are not known to be numerous in the area, but this may be the result of the low level of inventory. Known archaeological sites include the highly significant Bat Cave and a historic multi-room masonry structure of unknown origins. Bat Cave is on the National Register of Historic Places. Earlier people, living in the cave on the shores of the extinct Lake Agustin, developed what is believed by some to be the earliest domesticated maize in North America.

The numerous vantage points provided by the mountainous and rolling character of the WSA and the open character of the surrounding landscape result in outstanding scenic vistas. These vistas include the expanse of the Plains of San Agustin to the west and north, and mountains including the San Mateo, Black Range, and the Gila and Aldo Leopold Wilderness Areas to the east and south.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) system classifies the Continental Divide WSA as being within the Upper Gila Mountains Forest Province with a potential natural vegetation of 4,945 acres of ponderosa pine/Douglas fir forest, 11,112 acres of pinyon-juniper woodland, and 52,704 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time of both Albuquerque and Las Cruces, New Mexico.

B. Manageability

Manageability of the WSA as wilderness is reduced by state and private inholdings, poorly defined boundaries in the rolling grassland sections of the WSA, and cherry-stemmed roads. While these factors would complicate wilderness management, the Continental Divide WSA could be managed as wilderness.

Surface inholdings in the WSA total 3,420 acres of state land and 1,680 acres of private land. Reasonable access would be granted by the BLM to the owners of these inholdings.

The surface inholdings in the WSA contain rangeland developments including dirt tanks, a windmill, fences, and vehicle routes. Noncompatible uses of these private and state inholdings could impact the wilderness values of the WSA.

A private inholding north of Pelona Mountain could present the most significant management problems. It is located at the base of Pelona Mountain and contains the largest body of water in the WSA, as well as a cabin. The presence of these features will require special management attention to avoid conflicts between recreational users and the landowner.

Not enough is known of the mineral potential in this area to fully assess the management problems presented by the subsurface inholdings. The presence of private mineral rights in an area which are believed to have some degree of mineral potential does create a possibility of incompatible uses occurring within the area.

The awkward configuration and lack of identifiable natural boundaries along the eastern portion of the WSA presents management problems. The lack of topographic barriers to vehicular travel in this area combined with poorly defined natural boundaries would create trespass problems resulting from existing use patterns. These existing use patterns consist primarily of hunters driving to hunting camps within the WSA. Public education and increased levels of patrolling could reduce, but not eliminate, these problems.

Two roads which are cherry-stemmed into the western and northern portions of the WSA compound the problem of regulating vehicular access. The first enters the northern part of the WSA from Shaw Canyon and provides access to a private inholding containing a cabin owned and used by the Shaw Canyon Ranch. This road is used primarily for ranch operations and by hunters during hunting season. A second road, cherry-stemmed up Cottonwood Canyon, provides access to the western portion of the WSA for ranch operators, BLM personnel, and hunters.

V. PUBLIC INVOLVEMENT OVERVIEW

The draft wilderness analysis report for the Continental Divide WSA was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

The Continental Divide WSA was one of New Mexico's ten most discussed areas during the intensive wilderness inventory phase of the wilderness review process. The large size of the WSA and the presence of extensive grasslands which were felt to be underrepresented in the National Wilderness Preservation System were stressed in public support for recommending the entire WSA as wilderness. It was also pointed out that the area appears natural, offers outstanding opportunities for solitude and primitive recreation, and contains supplemental values.

Opponents of wilderness designation for the Continental Divide WSA included some Catron County residents and segments of the mineral and livestock industries. Prominent reasons included the effects of excluding the area from possible future mineral exploration and development, the presence of human impacts, limitations on ranch operations, and the feeling that additional wilderness would conflict with future development in the least developed of New Mexico's Counties.

Twenty-seven letters were received during the public comment period on the draft version of this report. Twenty-four of these letters supported wilderness designation for an area larger than that proposed in the draft. It was noted that the area has high wilderness and wildlife values, diverse landforms and habitats, and that this diversity would be increased through the addition of a larger area of grassland. Maps were also submitted in support of proposed boundary alternatives which would include additional areas of the grassland.

Two letters were received which opposed designation of the area as wilderness. Reasons for this opposition included the mineral potential of the area, especially for tin and base metals; its potential favorability for oil and gas; and the opinion that the area is monotonous and unnatural.

One response did not indicate support or opposition for wilderness designation, but commented on the lack of adequate data concerning livestock use in the amended boundary and on possible conflicts between wilderness designation and the objectives identified in the West Socorro Rangeland Management Program EIS. In response to this comment, a table which shows BLM grazing allotments, authorized use, and rangeland developments has been added to the amended boundary section. The relationship between wilderness designation and the objectives identified in the West Socorro Rangeland Management Program EIS is clarified in Chapter VI under the No Action/No Wilderness Alternative.

The major issues raised during the public comment period concerned the alternative selected by the Area Manager rather than the adequacy of the resource information or impacts presented in the report. It was noted by

opponents of wilderness designation that the area's mineral potential, especially for tin, indicates that it should be recommended unsuitable for wilderness designation. The assessment of the tin potential of the WSA has been reviewed as a result of the Geology, Energy and Mineral Resources Assessment of the San Agustin Area, New Mexico by Geoexplorers International, Inc. of Denver, Colorado. This assessment, which was not completed in time for inclusion in the draft report, assigns the Continental Divide WSA a low to moderate favorability for tin. This low to moderate favorability was considered in the final recommendation for the Continental Divide WSA.

The alternate boundary proposed in public comments represents a new alternative which was not considered in the draft. This new alternative has been evaluated in Chapter VI, Alternatives and Impacts, Amended Boundary.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 68,761 acres of public land within the Continental Divide WSA would be recommended suitable for wilderness designation. (See Map 15 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. There could also be significant impacts to mineral development if economical deposits of tin or base and precious metals were found to exist in the WSA. Impacts to air, Native American uses, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

To date, no production of energy minerals has been recorded within the WSA. Since the energy minerals favorability is low, impacts to the energy minerals industry would be minor. Economic benefits forgone to the energy minerals industry also would be minimal.

After wilderness designation, existing leases, if unexplored, would not be reissued and there would be no new leasing. As a result, there would be no opportunity for further assessment of the energy minerals potential or production and development.

Valid mining claims located before wilderness designation could be developed to their full potential. Additional costs may be incurred for development of these claims. This impact would not be significant.

No new exploration, prospecting, or location of mining claims would be allowed after wilderness designation. Mineral trends could not be followed outside of valid claim boundaries. If economically recoverable deposits of tin occur within the WSA, this could result in significant long-term impacts.

No permits for the removal of saleable minerals would be issued. Since there is a lack of local demand for these resources, this would be an insignificant impact.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

In the long-term, wilderness management could protect water, soils, and vegetation values by reducing surface disturbance and preserving the natural ground cover in the WSA.

b. Wildlife

Wilderness designation would limit, but not preclude management actions, prescribed in the Pelona Mountain Habitat Management Plan (HMP). The HMP is designed to improve big game and other species habitat through such things as vegetation manipulation and the construction of additional water sources.

Prescribed burns to reintroduce fire as a component of the natural ecosystem would be allowed under wilderness management. The prescribed burns would also accomplish most of the vegetation manipulations called for in the HMP. Nine additional wildlife water sources have been planned for the Continental Divide WSA. These waters and the fences necessary to protect them for wildlife use as well as the seeding of browse species would be allowed under wilderness management.

Short-term impacts of wilderness designation on wildlife would result primarily from the elimination of vehicular access into the WSA. This could reduce harassment, poaching, and hunting of game species. These reduced human impacts would complement the objective of the HMP and would result in a more rapid increase in wildlife populations than would occur under nonwilderness management.

Over the long-term, wilderness management would serve to protect natural values including the natural distribution and abundance of wildlife species in the WSA. This is especially true for those species that are dependent on an undisturbed setting during critical times in their life cycles such as nesting birds, roosting bald eagles, and wintering mule deer.

c. Visual

Existing visual resources would be protected. The area would be managed as a VRM Class I, which allows modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

d. Cultural

The elimination of vehicular access could reduce the chance of pothunting. Bat Cave, the most significant site known to occur in the WSA, is on the periphery of the WSA. The road which provides access to within 50 yards of the site would not be affected by wilderness designation.

Wilderness designation could enhance scientific and educational values by maintaining the natural setting of the archaeological resources.

e. Livestock Grazing

The WSA presently supports 12,754 animal unit months. The existing level of livestock operations as well as necessary vehicular access and the maintenance of rangeland developments are grandfathered and would continue under wilderness management. Grazing is a permissible and compatible activity in wilderness; however, limitations on vehicular access,

types of construction materials, and location of developments are necessary to protect wilderness characteristics.

It is difficult to assess how these limitations would affect grazing management in the WSA because the type and location of future rangeland developments have not been specifically identified at this time. However, based on such factors as existing ecological rangeland conditions, present livestock distribution, and the potential of the range sites, it is anticipated that additional rangeland developments could increase livestock grazing in the WSA. Wilderness designation would not have significant impacts on existing livestock grazing in the WSA.

Wilderness designation would limit, but not preclude, rangeland management actions. Limitations on design and placement of new rangeland developments would probably reduce maximum potential stocking levels.

Wilderness designation would result in the modification of the experimental stewardship program for the Y Ranch and the development and implementation of Allotment Management Plans (AMPs) for the Shaw Canyon, Adobe, Paddy's Hole, and Coyote Canyon allotments.

These AMPs will specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

Restriction of vehicular use inside the designated wilderness area could reduce vandalism of rangeland developments and other problems resulting from vehicle-dependent access.

f. Timber Harvest

Forest resources, consisting of 9.1 million board feet of ponderosa pine and pinyon-juniper woodlands estimated to contain 15,000 cords of firewood and fence posts, would not be commercially developed. The loss of timber potential in the WSA would not significantly affect timber production in the region. This is because of more suitable commercial timber stands on U.S. Forest Service land in the area and because past logging has removed most of the stands with commercial potential from the WSA.

The loss of firewood potential in the WSA would be a minor impact on the region because of the remote location of the WSA and the presence of other pinyon-juniper woodlands closer to population centers.

g. Recreation

Recreation activities which require motorized vehicles would be forgone. In the Continental Divide WSA, deer and pronghorn hunters would be significantly affected. There are two large pronghorn hunt units and several hunting camps within the WSA. The present hunter use patterns would be altered under wilderness management. Presently there is little recreational use, besides hunting, in the WSA. This level of use could

increase in the future if the proposed Continental Divide National Scenic Trail is routed through the WSA. It is not anticipated that facilities to support trail use would be affected by wilderness designation.

By preserving the solitude and natural values in the Continental Divide WSA, wilderness designation would ensure that outstanding opportunities for primitive recreation now present in the area would continue to be available to meet future needs.

h. Wilderness Values

Wilderness designation would provide the existing wilderness values present in the Continental Divide WSA with significant long-term Congressional protection. The area would be managed to maintain existing wilderness values. The BLM could manage the Continental Divide WSA in the long-term to provide a quality wilderness experience.

B. Amended Boundary

Under this alternative, 35,635 acres would be recommended suitable for wilderness designation and 33,126 acres would be recommended unsuitable for wilderness designation. Under this alternative, significant impacts to wilderness values could occur. Impacts to air and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

This amended boundary differs from the boundary proposed in the draft report. This readjusted boundary (see Map 15) alters the original recommendation by including a large area of rolling grassland south of Pelona Mountain and excluding approximately one section from the western edge of the WSA.

The boundary adjustment proposed in the draft report would have excluded much of the open rolling grasslands from the area suitable for wilderness designation. Comments received on the draft report indicated a high degree of public support for the inclusion of more of the rolling grasslands in the suitable recommendation. The public support for additional grasslands and the lack of conflict with other resource uses resulted in a refinement of the Amended Boundary Alternative.

The amended boundary would contain the area of the WSA found to have the highest potential for primitive recreation and the major ecotypes found in the original WSA. Using the Bailey (1976) - Kuchler (1966) classification system, the amended WSA boundary would contain 4,274 acres of the original 4,945 acres of ponderosa pine/Douglas fir forest ecotype, and 10,771 of the original 11,112 acres of pinyon-juniper woodland ecotype. The grama-galleta steppe represented in the WSA would be reduced from 52,704 acres to 20,590 acres. This would be a significant reduction in the amount of pronghorn habitat represented in the WSA, but other large mammal and raptor habitat would not be significantly reduced.

Private inholdings would be reduced from 1,680 acres to 80 acres and state land and mineral estate would be reduced from 3,420 acres to 1,920 acres. This would also reduce non-Federal mineral rights from 1,640 acres of private minerals to 80 acres.

1. Impacts to Minerals

Under this alternative, the majority of the area classified as prospectively valuable for oil and gas would be eliminated. The majority of the lands which have been leased for oil and gas and three mining claims would be eliminated.

Under the Amended Boundary Alternative, a large portion of the area rated as having a moderate potential for the occurrence of tin would be located outside the amended boundary. The impacts to minerals are similar in scope but reduced in quantity from the impacts discussed under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Wilderness management could protect water, soils, and vegetation by reducing surface disturbing activities and preserving the natural ground cover in the area.

b. Wildlife

Possible limitations on wildlife habitat management actions would be reduced under this alternative. Six of the nine wildlife water catchments proposed in the Pelona HMP would fall outside the amended boundary. Impacts to proposed vegetation manipulations would also be reduced by the smaller wilderness recommendation.

The impacts to wildlife inside the amended boundary would be the same as those described under the All Wilderness Alternative.

c. Visual

The majority of the lands excluded from the amended boundary would be managed under a VRM Class IV, which permits significant changes in the basic elements of the landscape as a result of management actions.

Approximately one section of land outside the amended boundary would be in VRM Class II and would be subject to moderate changes in the basic elements of the landscape as a result of management actions as long as the changes do not attract attention.

d. Cultural

Impacts to known cultural resources would be the same as those described under the All Wilderness Alternative.

e. Livestock Grazing

The impacts on livestock operations inside the amended boundary would be the same as those described under the All Wilderness Alternative. However, the amended boundary would eliminate direct impacts

to two livestock operations (Paddy's Hole and Coyote Canyon) and reduce the impacts to three other operations.

ALLOTMENTS AND RANGELAND DEVELOPMENTS
WITHIN THE AMENDED BOUNDARY ALTERNATIVE

Allotments	Authorized Use (Federal)	Rangeland Developments
Y Ranch	1,620 AUMs; 135 CYL ^{a/}	8 miles of boundary fence 1/2 mile of interior fence 2 dirt tanks
Shaw Canyon	2,820 AUMs; 235 CYL	6 miles of boundary fence 5 dirt tanks
Adobe Ranch	1,788 AUMs; 149 CYL	4 dirt tanks

Note: ^{a/}AUMs - Animal Unit Months; CYL - Cows Year Long.

f. Timber Harvest

The amended boundary would eliminate approximately 671 acres of ponderosa stands and 341 acres of pinyon-juniper woodlands from the WSA. The forested lands excluded under this alternative could potentially increase the lands available for fuelwood harvesting in the region but would represent an extremely small percentage of the total available supplies.

g. Recreation

The amended boundary contains the portions of the WSA that have the most varied and interesting terrain and the highest potential for primitive recreation.

For the area within the boundary, the impacts would be the same as those described in the All Wilderness Alternative. Under the Amended Boundary Alternative, reducing the size of area that would be closed to motorized access would alter hunting patterns.

Approximately 10 miles of the Continental Divide Trail through the WSA would be eliminated from the amended boundary. Nonwilderness management along this portion of the Continental Divide National Scenic Trail (CDNST) could result in impacts from possible future mineral activity and motorized uses. These impacts would reduce solitude and natural values along this segment of the CDNST.

h. Wilderness Values

The 35,635 acres within the amended boundary possess the wilderness characteristics of naturalness, outstanding opportunities for solitude, and primitive recreation. In addition to the mandatory wilderness characteristics, the area contains diverse wildlife habitat and vegetation as well as scenic and cultural resources. The impacts to these wilderness values would be the same as those described under the All Wilderness Alternative.

The 33,126 acres outside the amended boundary possess the wilderness characteristics of naturalness and opportunities for solitude. These rolling grasslands also represent good pronghorn habitat and an expansive visual landscape. The impacts to these wilderness values would be the same as those described under the No Action/No Wilderness Alternative.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 68,761 acres of public land within the Continental Divide WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III.

Based on decisions contained in the Divide Management Framework Plan (MFP) (BLM 1983), the most probable uses of the area, if it is not designated wilderness, would be continued livestock grazing and possible mineral exploration. Management actions such as vegetation manipulation, rangeland developments, and watershed and wildlife projects would also occur. Although mineral development in the WSA is considered unlikely, it could occur if economical deposits were located. Continued vehicle use in the WSA would create new routes to such things as new rangeland developments and hunter camps. These probable land uses could produce significant impacts to wilderness values.

Under the No Action/No Wilderness Alternative, the impacts to air, Native American uses, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values of the Continental Divide WSA would not be provided with long-term Congressional protection. Vehicular access and new developments in the WSA would have a local impact on the area's naturalness and opportunities for solitude and recreation. The impacts to wilderness values under this alternative could be significant.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Watershed management actions, including prescribed burns to reduce pinyon-juniper and increase ground cover, would be conducted as described in the Divide MFP. Continued vehicular access, over time, could result in additional ruts and create the potential for reduced watershed quality.

b. Wildlife

If nonwilderness management results in significant increases in human activity in the area, it could impact wildlife habitat by disrupting fawning grounds, and roosting and nesting areas. Management actions proposed in the Pelona Habitat Management Plan would not be limited

under this alternative. These management actions could, in the long-term, produce a more diverse habitat than the operation of natural processes which would occur under wilderness management.

c. Visual

In the VRM Class II areas, minor to moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. The VRM Class IV areas would be subject to significant change in the basic elements of the landscape as a result of management actions. Predicted land uses in the WSA would not result in significant impacts to visual resources in the short-term.

d. Cultural

There would be no impacts to current research efforts at Bat Cave or to possible future efforts at other sites. Continued vehicular access would create a greater potential for archaeological vandalism than would the elimination of vehicular access under wilderness management.

If nonwilderness management results in the alteration of the natural context of archaeological sites, it could reduce the scientific potential of these sites. This reduction would result from the loss of information concerning how earlier people related to their surrounding environment.

e. Minerals

There would be no impacts to leasable, locatable, or saleable minerals under this alternative. Mineral exploration and development would be regulated to prevent unnecessary and undue degradation. No economic benefits would be lost under this alternative.

f. Livestock Grazing

Under this alternative, there would be no impacts to livestock operations in the WSA.

g. Timber Harvest

Forest resources would be managed according to the decisions contained in the Divide MFP and the Pelona and Horse Mountain Fire Management Plan. No commercial timber harvesting activities are planned nor anticipated at this time. If demand is found to exist, the area could be used as a commercial fuelwood sale area.

h. Recreation

Present hunter use patterns would continue. There would be no constraints to possible developments associated with the CDNST. Opportunities for primitive recreation may be reduced in time by impacts of vehicular use in support of livestock grazing, hunting, and mineral exploration.

APPENDIX P

DEVIL'S BACKBONE WSA (NM-020-047)

I. GENERAL DESCRIPTION

A. Location

The Devil's Backbone Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 15 air miles southwest of the community of Socorro.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Puertecito Gap and South Baldy quadrangles. Both of these are New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

The WSA is located on the western edge of the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 12 inches per year. However, the highest elevation lands (8,000+ feet) average at least 16 inches of precipitation. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA includes a portion of the rugged and broken southern flank of the Magdalena Mountains. The WSA rises precipitously out of the surrounding desert grassland and culminates in sharp, knife-like ridges and stark, rocky peaks. Elevations range from 5,400 feet to 8,100 feet with a maximum relief of 2,700 feet. The extreme topography is occasionally interspersed with small park-like areas on mountain and ridge tops, on benches, and in the saddles between peaks. Because of the rapid fall-off in relief, canyons are not well developed within the boundaries of the WSA.

C. Land Status

The WSA contains 8,904 acres of public land. (See Map 16 for land status within the WSA boundary.) There are no private or state inholdings within the area.

D. Access

There is no legal access to the WSA.

DEVIL'S BACKBONE WSA (NM 020-047) MAP 16

Legend

— WSA BOUNDARY

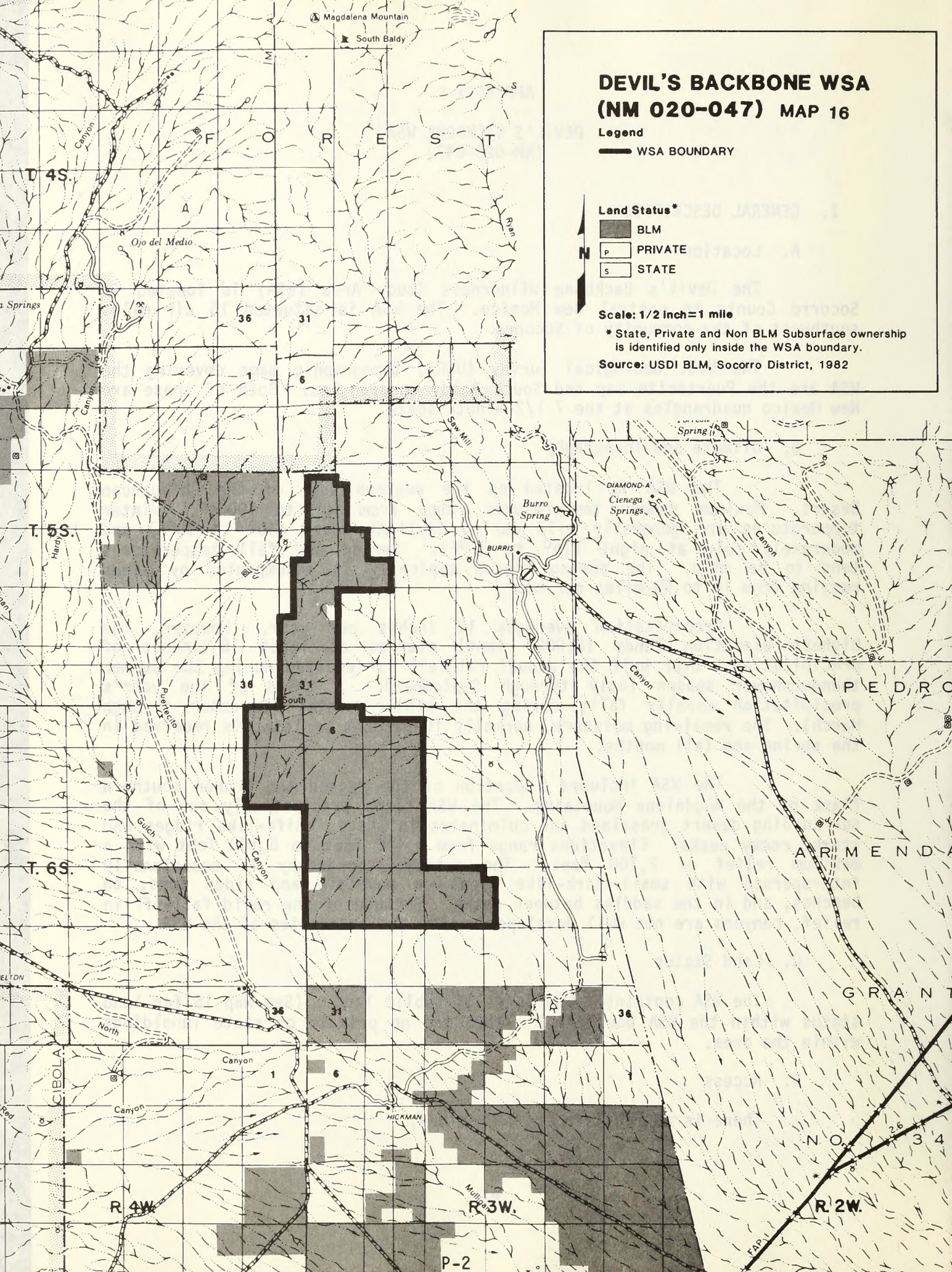
Land Status*

- BLM
- P PRIVATE
- S STATE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership
is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982



II. EXISTING RESOURCES

A. Geology

The geology of the WSA consists of Mid-Tertiary volcanic rocks of the Mogollon-Datil Province. The structure of the WSA is influenced by Mid-Tertiary emplacement of plutons, which are subsurface bodies of igneous rock and cauldrons, which are features resulting from the lowering along steep ring fractures of more or less cylindrical blocks of the earth's crust. The volcanic rocks of the WSA were formed from lavas erupted along the fractures associated with the cauldrons, each of which produced a distinctive type of lava. In addition, lavas of different compositions were erupted during different periods of time. Basaltic rocks were produced from cauldrons active 30-39 million years ago, and rhyolite, quartz latite, and basaltic andesite were erupted 20-30 million years ago.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1-0.5 inches per year.

There are no developed ground water sources within the WSA. Ground water in Antelope Well, which is located adjacent to the WSA's southwestern boundary, is considered as representative of the area. Analysis of ground water samples taken from this well indicates it is suitable water quality for livestock purposes.

C. Soils

Approximately 85 percent of the soils in the WSA are shallow gravelly and stoney loams derived from volcanic material. The remaining 15 percent are deep gravels on low ridges with small areas of deep loams in swale areas. Slopes in the WSA range from 15 to 75 percent. Rock outcrops occur on the ridge tops and along some of the steep side slopes.

D. Vegetation

1. General

The Devil's Backbone WSA lies entirely within a grassland vegetation type with plant species composition influenced by elevation. The principal plant species found in the lower elevations include black grama, poverty threawn, sideoats grama, fluffgrass, burrograss, and galleta grass. A minor percentage of the lower elevation plant composition may be attributed to woody vegetation with Apacheplume and fourwing saltbush the primary representatives of this group.

Mid-elevational plant species are primarily blue grama, hairy grama, little blue stem, Arizona fescue, mountain mahogany, shrub live-oak, sotol, and alligator juniper. In addition to the previous species, the

highest elevations are characterized by scattered stands of pinyon and ponderosa pine, as well as a few isolated Douglas fir on the highest north-facing slopes.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of four Federally-listed and seven state listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Two Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. The SHS's support 194 wildlife species, which include 50 mammal species, 50 reptile and amphibian species, and 94 resident and migratory bird species. A complete list of wildlife species found within the WSA is on file at the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Estimated deer densities for this portion of the WSA are three animals per square mile. Pronghorn are relatively abundant in the surrounding grassland areas at the base of the mountains along the WSA's periphery.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Mountain lion may occasionally range into the WSA. Common small mammals include desert cottontails, prairie dogs, black-tailed jackrabbits, white-throated woodrats, deer mice, and ground squirrels.

The mountainous topography and numerous rock outcrops are attractive to birds of prey. One golden eagle eyrie is known to be present in the WSA. Other birds which are commonly sighted include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and the western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The FWS furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. In addition, little potential habitat exists for supporting migrating individuals as the WSA lacks a sufficient prey base and available water.

F. Visual

The WSA includes the rugged, grass dominated southern flanks of the Magdalena Mountains. Topographic relief is dramatic, landscape diversity is high, and scenic vistas from within the WSA are characteristically spectacular, especially during morning and evening hours.

G. Cultural

No cultural sites have been recorded within the WSA. Seven sites have been recorded within a 12-kilometer radius of the WSA. These site types vary from lithic scatters to historic habitation sites with temporal spans ranging from 4000 B.C. to 1930's historic structures. Although cultural sites may be present within the WSA, density is anticipated to be low.

H. Air

Generally, the quality of the air within the Devil's Backbone WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when strong gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Four noncompetitive oil and gas leases have been issued within the WSA. All leases are recently issued and subject to Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review (BLM 1979). No exploration or development for oil and gas has occurred in the WSA to date.

The WSA is located in a Class IV favorability area, the least favorable class for discovery of oil and gas. Paleozoic formations underlying the area include adequate source and reservoir rocks, but faulting associated with the cauldron formation and the Rio Grande Rift preclude entrapment of oil and gas in significant quantities. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The WSA is within the Socorro Peak Geothermal Leasing Area.

Although the WSA has a heat flow which suggests a somewhat anomalous heat source, there is no evidence of underlying magma chambers as in the Socorro Known Geothermal Resource Area to the north. In addition, no warm springs are known to exist in the WSA. The area is considered to be unfavorable for discovery of geothermal resources.

2. Locatable

There are no valid mining claims within the WSA. The WSA has potential for the occurrence of the following locatable minerals:

a. Manganese

The volcanic rocks within the WSA are favorable for the occurrence of hydrothermal manganese deposits. One known manganese occurrence is within a mile of the WSA and one is within the WSA, but there has been no production from either location. The WSA was intensely prospected during the 1940's and 1950's, and no major deposits were discovered. The WSA is considered to have low favorability for discovery of manganese deposits.

b. Gold

There has been minor gold production to the north and west of the WSA from volcanic rocks similar to those in the area. The WSA does not contain any known gold occurrences and is considered to have low favorability for discovery of gold deposits.

c. Uranium

The Santa Fe formation could be a host for stratabound uranium deposits because it contains uranium-rich volcanic source rocks, permeable horizons, and may contain reactants such as organic matter. The WSA is partly underlain by the Santa Fe formation, but it is unlikely to be very thick. The WSA is considered to have low favorability for the occurrence of uranium.

d. Kaolin

At Socorro Peak, to the north of the WSA, rhyolite has been hydrothermally altered to kaolin. Hydrothermal alteration of the volcanic rocks within the WSA could have caused kaolinization. The WSA is considered to have low favorability for such occurrences.

3. Saleable

No material sales have been conducted within the WSA, and no future sales are anticipated. Potential saleable materials include sand, gravel, and crushed rock. However, the lack of local demand, no legal access to the WSA, and the existence of similar materials in more accessible areas makes development of these resources unlikely.

B. Watershed

The WSA is located within the Puertecito Gap watershed. It is characterized by a complex of different soils, slopes, and exposures. Physiographic features include pediment slopes, rolling hills, and mountain slopes. The majority of soils are coarse textured with moderate to slow permeability and high runoff potential. Current erosion conditions for most of the WSA are rated as stable and slight. There are only small areas where erosion is expected to increase. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Four grazing allotments lie partially within the WSA. The VL Ranch and the Antelope Well allotments are owned and operated collectively by one permittee. The Puertecito Gap and the SO Ranch allotments are separate ranching units. All four allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
SO Ranch	3,410	656	1,760	51%
VL Ranch	2,310	420	2,200	95%
Antelope Well	9,146	1,020	40	0%
Puertecito Gap	5,331	659	4,904	91%
TOTAL			8,904	

2. Ranch Management

Permittees periodically inspect and maintain developments through the use of motor vehicles with the exception of fence maintenance, which is performed primarily on horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
SO Ranch	1 3/4 miles of fence 1 3/4 miles of access route 1 3/4 miles of pipeline
VL Ranch	2 1/2 miles of fence 3/4 mile of access route
Antelope Well	1/4 mile of fence
Puertecito Gap	2 1/2 miles of fence 2 1/2 miles of access route 1 mile of pipeline with 2 drinking troughs 1 dirt tank

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

Although the WSA is relatively close to the community of Socorro in terms of air miles, it is an isolated, difficult-to-reach area in terms of on-the-ground access.

Existing recreational use of the WSA is low except during the deer hunting season, when moderate use occurs. In addition to deer hunting, existing primitive recreational use is limited to occasional day hikes. Potential primitive recreation opportunities are discussed in Chapter IV.

The recreational use of the WSA is not expected to increase within the foreseeable future.

E. Education/Research

The WSA is not currently being utilized for any known research or educational purpose.

The WSA lies in an ecotone between various elements of the Chihuahuan Desert, the Colorado Plateau, and the Upper Gila Mountains Forest ecological provinces. Research and environmental education potential for ecosystem studies may be high.

F. Wildlife

The WSA was included in the Nogal Canyon Habitat Management Plan (BLM 1981). Five wildlife water catchments (inverted umbrella type) were installed in the WSA as proposed by the plan in 1981 and 1982. No additional habitat improvements are planned for the WSA.

The WSA has not been identified by the New Mexico Department of Game and Fish for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

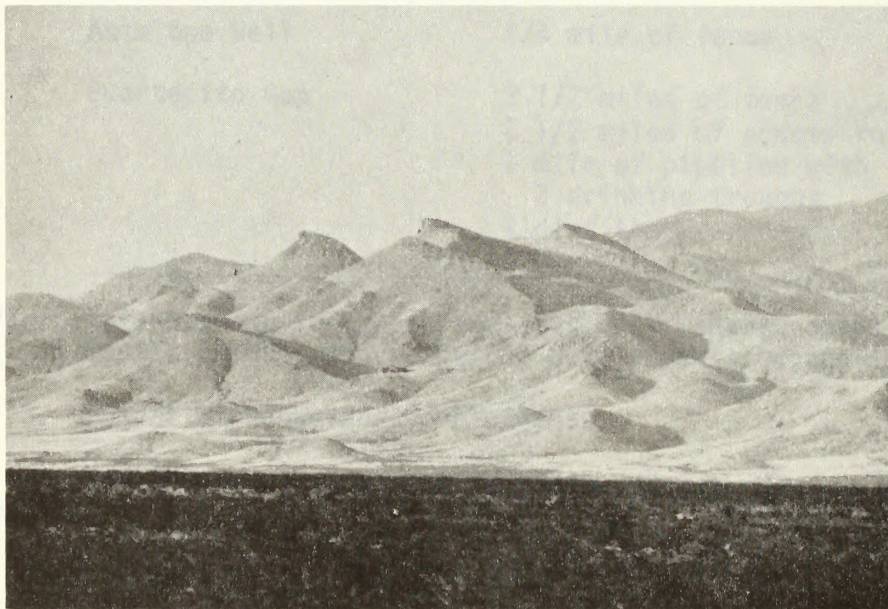
a. Naturalness

The majority of the WSA is free of human intrusions. However, a water pipeline crosses the northern third of the WSA which has adversely affected the naturalness values. Installation of the pipeline resulted in considerable surface disturbance (cuts with a bulldozer are common) which would be difficult to rehabilitate. A good vehicle route is located along this pipeline. In addition, a substantially noticeable jeep trail runs south into the WSA for a distance of 1 mile. These developments reduce the naturalness of a portion of the WSA.

With the exception of the above intrusions, human impacts to the WSA are for the most part insignificant. They include: 5 wildlife water catchment structures, 1 dirt tank, 7 miles of fences, 1 mile of pipeline with drinking troughs, and 5 miles of two-track vehicle routes. The majority of these intrusions are located along the WSA's periphery. Except for allotment fencing, the southern half and northern quarter of the WSA are natural.

b. Solitude

The WSA is isolated, little visited, difficult to access, and rugged. The topographic diversity and geographic setting provide outstanding opportunities for solitude.



Overview of the Devil's Backbone WSA.

c. Primitive and Unconfined Recreation

The Devil's Backbone WSA is not a typical primitive recreation area. There are few trees, water is scarce, and rocks, rattlesnakes, and grasses predominate. Although wildlife, relative to most desert areas, is abundant, they tend to be elusive.

The scenic values of the WSA, especially in terms of scenic vistas from within the area, are appealing. However, being a rugged desert range, the WSA is not often considered recreationally inviting. The only exception is for deer hunting. This situation notwithstanding, the WSA can provide visitors with the opportunity to experience a natural desert mountain environment suited to day hiking, backpacking, horseback riding, nature and landscape photography, natural history activities (e.g., birdwatching) and environmental exploration. The area is most attractive to these recreational pursuits during off-season (late fall and winter).

2. Special Features

There are no special features within the WSA.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Designation of the WSA as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

A more detailed discussion of multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Devil's Backbone WSA as being in the Chihuahuan Desert Province and the Upper Gila Mountains Forest Province with a potential natural vegetation of 3,904 acres of grama-tobosa shrubsteppe, 4,000 acres of grama-galleta steppe, and 1,000 acres of pinyon-juniper woodland.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs), are located within 5 hours driving time of the WSA. Albuquerque and Las Cruces, New Mexico, are within 3 hours and El Paso, Texas, is within 4 hours driving time.

B. Manageability

Several factors affect the manageability of the Devil's Backbone WSA: location and configuration of the boundary, existing rangeland developments, and the lack of legal access.

The WSA boundary is set entirely on legal subdivision lines. The boundary excludes the rugged southern flank of the Magdalena Mountains. From a topographic standpoint, this boundary is arbitrary and difficult to locate on-the-ground. Land acquisition to consolidate the WSA's boundary would be desirable to improve on-the-ground identification of the boundary. The WSA is relatively small and much of its northern half is a mile wide or less. These factors negatively impact the BLM's ability to manage the area as wilderness.

A buried water pipeline and associated vehicle route bisect the northern third of the WSA. Because of the rugged rocky terrain of the WSA, the maintenance frequency of this pipeline is high. This pipeline and associated maintenance route reduce the BLM's ability to manage this portion of the WSA for naturalness or outstanding opportunities for solitude.

Another manageability concern is that of legal access to the WSA. At the present time, there is no legal access. Therefore, the accessibility or availability of the WSA for wilderness purposes, such as primitive recreation, is not guaranteed. Easements or rights-of-way would have to be obtained to guarantee access to the area. This is a minor concern. While note of these factors in themselves render the area unmanageable, the cumulative effects reduce the BLM's ability to manage the WSA as wilderness.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has, with few exceptions, indicated support for designation of the Devil's Backbone WSA as a wilderness area. Reasons cited have concentrated on the WSA's naturalness and solitude values.

Opposition to designation of the area has been minimal. One grazing permittee submitted a proposed wilderness boundary which would essentially exclude his allotment.

Seventeen letters were received during the public comment period on the draft version of this report. Nine respondents supported wilderness designation for Devil's Backbone. Reasons for this support centered around the area's wilderness and wildlife values. The BLM's assessment of management difficulties resulting from the configuration of the boundary was also questioned, and it was noted that the BLM erred in its statement that wilderness designation would require the BLM to attempt to acquire adjacent lands to produce a topographically identifiable land unit with recognizable boundaries. This comment is accurate and the final report has been revised to indicate that it would be desirable, as opposed to required, for wilderness management to acquire adjacent lands.

Eight respondents opposed wilderness designation for the Devil's Backbone WSA. Among the reasons cited were potential mineral resources, including manganese and geothermal potential, and that the area was too confined and encroached upon by man-made intrusions to provide a high quality wilderness experience. Agreement was also expressed concerning BLM's assessment of the manageability of the area.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 8,904 acres of public land within the Devil's Backbone WSA would be recommended suitable for wilderness designation. (See Map 16 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. The impacts to air, education/research, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the WSA is recommended suitable for wilderness designation, a U.S. Geological Survey and U.S. Bureau of Mines mineral-energy survey would be conducted to supplement current data regarding the mineral-energy occurrence potential for the area.

a. Leasable

The WSA has low potential for economically recoverable oil and gas reserves or for the development of geothermal resources. Wilderness designation would have little or no impact on oil and gas or geothermal resource development.

b. Locatable

Manganese is known to occur in the WSA and low favorability exists for occurrences of gold, uranium, and kaolin. Wilderness designation would prevent development of these resources. Based on current information, wilderness designation would have little impact, since most of the known deposits of these minerals in areas surrounding the WSA tend to be small and are not economical to mine.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Precluding significant surface disturbance and preserving the natural ground cover of the WSA would maintain or enhance the existing water, soils, and vegetation conditions.

b. Wildlife

The designation of the entire WSA would permanently preserve 8,904 acres of wildlife habitat. The natural distribution and

abundance of wildlife species would be maintained. Wildlife waters would be inspected and maintained without motorized equipment. The impact of wilderness designation on wildlife management activities in the WSA would be low.

c. Visual

The scenic values of the WSA would be permanently preserved by wilderness designation.

d. Cultural

No known cultural sites are documented within the WSA. However, the likelihood sites exist in the WSA is high with overall site density projected to be low. Wilderness designation would protect potential sites within the area as well as the environmental context in which they occur. Because the cultural values of the WSA are unknown, impacts cannot be further assessed.

e. Livestock Grazing

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low to moderate.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are necessary to ranch operations. Vehicle routes necessary to maintain existing developments could remain open to use by area permittees.

f. Recreation

There would be a negligible impact on the current recreation use of the area. Hunters would be denied motorized access.

g. Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and management of the area to maintain wilderness values would produce significant impacts to wilderness. Necessary vehicular access to rangeland developments could reduce naturalness and opportunities for solitude.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the Devil's Backbone WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing use would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued low levels of recreational use and livestock grazing.

Under the No Action/No Wilderness Alternative, the wilderness values of the WSA could be significantly impacted in the long-term.

1. Impacts to Wilderness Values

The wilderness values of Devil's Backbone would not be provided with long-term Congressional protection. In the long-term, probable uses of the area could significantly impact wilderness values.

2. Impacts to Other Resources and Uses

a. Visual

The WSA is considered to possess high scenic values. Under this alternative, the maintenance of these values could not be ensured. In the long-term, visual resources could be degraded.

b. Other Resources

There would be no impacts to water, soils, vegetation, wildlife, cultural resources, minerals, livestock grazing, and recreation under this alternative.

APPENDIX Q

EAGLE PEAK WSA (NM-020-019)

I. GENERAL DESCRIPTION

A. Location

The Eagle Peak Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 6 air miles west of Quemado.

The U.S. Geological Survey topographic maps covering the WSA are the Armstrong Canyon, Blaines Lake, Lake Armijo, Tejana Mesa, Tejana Mesa SW, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

Eagle Peak has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September, primarily from brief but often heavy thundershowers. Winter is usually the driest season. The WSA receives 9 to 14 inches of precipitation annually.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Eagle Peak WSA consists of rolling topography broken by sandstone and basalt mesas and canyons. Volcanic features, including large cinder cones and associated lava flows, are also present and result in a topographically diverse WSA. Elevations range from 6,400 feet to 7,550 feet, with the highest elevations occurring in the eastern portion of the WSA.

C. Land Status

The WSA contains 32,748 acres of public land. Inholdings within the WSA consist of 80 acres of state land, 360 acres of private land, and 5,640 acres of BLM surface/state subsurface mineral estate. (See Map 17 for land status.)

D. Access

The WSA has good physical and legal access. State Highway 32 is adjacent to portions of the northern boundary of the WSA and County Road A007 parallels the western edge of the WSA. Numerous unimproved ranch access routes traverse the WSA from north to south and east to west.

MESITA BLANCA WSA (NM 020-018) MAP 20 **EAGLE PEAK WSA** (NM 020-019) MAP 17

Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

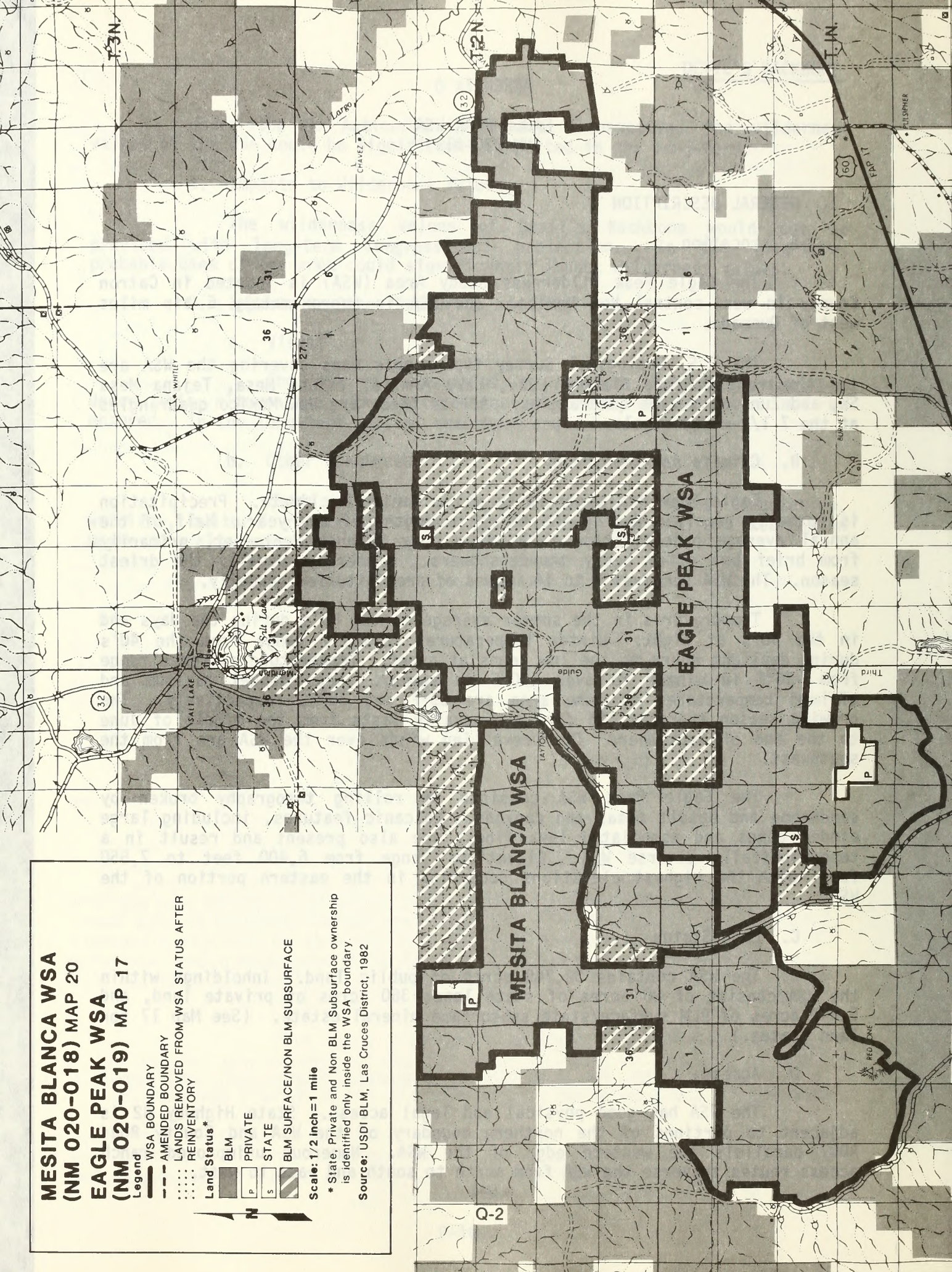
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The Eagle Peak WSA lies within the southern portion of the Colorado Plateau. Gently southeastward dipping sediments of Cretaceous and Tertiary age dominate the surface geology of the WSA. Natural erosion of these sediments has produced mesas of low relief throughout the area. Flows of Quaternary basalts and numerous related cinder cones occasionally cap the older formations within the vicinity. Thin Quaternary alluvium also forms the surface of a significant portion of the central part of the WSA.

Exploration wells drilled within the region indicate that Precambrian granite, Permian sediments, and Triassic sediments occur beneath the surficial deposits.

In general, a long history of sedimentary rocks, which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then, in part, covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

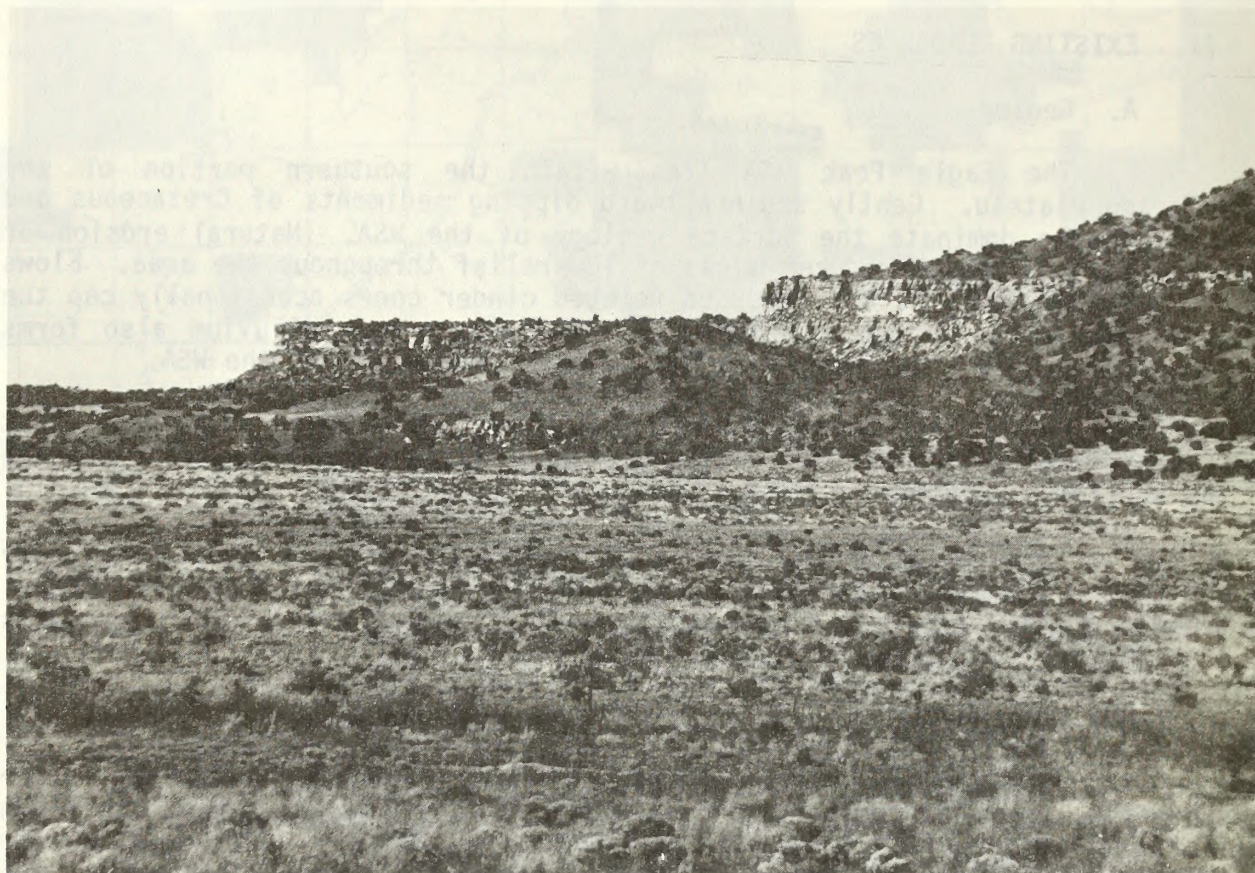
The Eagle Peak WSA is located in the Little Colorado River sub-basin. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the mainstreams. Earthen type reservoirs designed to catch and store runoff normally contain water 6 months of the year.

The source of all water in the Little Colorado sub-basin is precipitation. No ground water is known to enter the basin from outside areas. Most rock formations present will yield enough ground water locally to supply stock needs. The alluvium of stream valleys and bolson fill are the most important ground water reservoirs in the WSA. There is a large volume of ground water available for development in the Little Colorado sub-basin, but is so distributed as to make recovery in large amounts uneconomical. In general, ground water from stream-valley alluvium and bolson deposits is of good quality and suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Ground water from intrusive and volcanic rocks is generally of good quality but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, ground water is usually highly mineralized.

C. Soils

The soils in Eagle Peak were formed in a variety of parent materials, including sandstone, shale, basalt, volcanic ash, and cinders.

Approximately one-third of the area is composed of soils which formed in volcanic ash or cinders. These soils are on gently sloping to rolling slopes and have a slight water erosion hazard.



Sandstone Mesas.

Another one-third of the area has soils that developed over basalt or sandstone. The water erosion hazard on these soils is slight except on steep slopes.

There are two small areas of erosive soils in the WSA. The fine textured soils that occur in broad swales and drainage ways and the soils on steep rocky side slopes of mesas, badlands, and canyons have a high water erosion hazard and would be easily damaged by surface disturbance.

D. Vegetation

1. General

In the Eagle Peak WSA, the following Standard Habitat Sites (SHS's) are present:

Pinyon-Juniper Hill (20,570 acres)

The pinyon-juniper hill SHS occurs primarily on hills and steep slopes and in places, is found on flats next to the slopes. Principal vegetation, other than pinyon-juniper, includes blue grama, mountain mahogany, oak, and rubber rabbitbrush, with fringed sage, winterfat, and bottlebrush squirreltail also present. Animals commonly found in these areas include cottontails, black-tailed jackrabbits, coyotes, mule deer, striped skunks, kit foxes, red-tailed hawks, and golden eagles.

Blue Grama-Snakeweed Hill (10,100 acres)

The blue grama-snakeweed hill SHS is primarily found on lower hills and in openings interspersed within the pinyon-juniper hill SHS. The principal vegetation includes blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Other plant species present include fringed sage, winterfat, galleta, Apacheplume, oak, and scattered pinyon and juniper. The aspect is usually short and mid-grasses, with scattered low shrubs. Common animals in this area include black-tailed jackrabbits, coyotes, kit foxes, pronghorn, red-tailed hawks, and golden eagles.

Russian Thistle-Alkali Sacaton Valley (2,078 acres)

This SHS is found primarily in large, flat bottomlands and low spots. Principal vegetation, other than Russian thistle and alkali sacaton, includes fringed sage, winterfat, bottlebrush squirreltail, and annual forbs. Common animals in this area include cottontails, black-tailed jackrabbits, coyotes, and pronghorn.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of eight threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Eagle Peak WSA supports approximately 306 wildlife species including 57 reptile and amphibian species, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species occurring in the Eagle Peak WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Fauna Species

In addition to the characteristic wildlife species present, the WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federal endangered species. Wintering bald eagles are known to occur in the WSA.

F. Visual

This large WSA contains scenery rated as Visual Resource Management (VRM) Classes II and III.

The scenery in most of the WSA has been designated as VRM Class III. It is an area of mesas and open grasslands with visual interest enhanced by volcanic features and sandstone cliffs.

The VRM Class II scenery in the Cottonwood Canyon area is derived from the eroded sandstone, which has produced a visual environment characterized by vertical relief and colorful erosional features.

G. Cultural

Portions of the WSA were the subject of a Class II Cultural Resource survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 6,400 acres in the WSA, identified 63 archaeological sites ranging from petroglyphs to campsites and villages. These sites represent human habitation from the Archaic period (6000 BC to Christian Era) to the homesteading era. Based on the results of the Class II survey and project specific inventories, cultural resource values in the WSA are considered to be high.

The cultural values of the WSA are enhanced considerably by the presence of Zuni Salt Lake immediately north of the WSA. The Lake has long been a source of pure salt. Early man probably visited the site; however, whether it served as his salt supply is unknown. Indian ruins dating back 1,000 years have been found in the area, which give evidence of the prehistoric importance of the area. Because of the availability of this nutritional necessity, the Indians of the Southwest, including the Acoma, Laguna, Zuni, Apache, and Navajo, have built up extensive religious beliefs concerning the area. Many tribes continue to make pilgrimages to the Lake to gather domestic salt and to worship. Among the deities believed to inhabit the area are the Twin War Gods and Salt Mother. With the arrival of the Spaniards in 1540, the Lake became known historically when they praised the quality of the salt in their journals. Zuni Salt Lake, in addition to being a source of salt and ceremonial significance, was considered to be neutral ground, regardless of current hostilities.

H. Air

Generally, the quality of air within the Eagle Peak WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

This situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Ten exploratory oil and gas wells and deep water wells have been drilled within the Quemado area; however, none of them were within the WSA. This local drilling verified that a sequence of oil and gas reservoir and possible source rocks occurs in the area. Although the U.S. Geological Survey classifies the region as being prospectively valuable for oil and gas, available information suggests a low favorability for the lands in the WSA.

Three Federal noncompetitive oil and gas leases are present within the eastern portion of the WSA. These leases cover approximately 3,100 acres. It is probable that most of the Federal mineral estate in this area could be leased noncompetitively for oil and gas. Although no oil and gas exploration has occurred within the WSA, three dry wells have been drilled locally since 1950. Any positive evidence of oil and gas in the region could stimulate exploration attempts within the WSA.

b. Coal

Private and government exploration in areas 15 to 20 miles northeast of the WSA have identified possible economic coal reserves within the Mesaverde group. Although the Mesaverde group occurs shallowly in much of the WSA, recent information indicates that the potential for economic coal deposits is low because if present, the coal would occur in thin beds and/or at depth.

c. Geothermal

Although moderate geothermal anomalies exist within the region, there is very low potential for any exploration or development of geothermal resources.

d. Salt

The saline spring-fed Zuni Salt Lake, located along the northern border of the WSA, is evidence that a concentrated source of salt probably occurs locally within the subsurface.

A New Mexico State salt lease has been active at the Zuni Salt Lake for approximately 40 years. The Zuni Salt Lake is adjacent to the northwestern extension of the WSA. Despite the lease's longevity, only minor production has occurred at the property. Although low, there is a possibility that exploration for the salt's source could occur within the WSA.

2. Locatable

Within the WSA, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration within and adjacent to the WSA has identified sub-economic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate favorability for economic deposits.

Currently, there is no known exploration or development of locatable minerals within the WSA. Several hundred mining claims were recorded in 1978 with the BLM for the area along and within the southeastern margin of the WSA where the Baca formation crops out. The Energy Reserves Group and Teton Exploration Drilling located these claims for potential uranium mineralization. Nine uranium test holes were drilled within the southernmost group of claims, four of which were along the southern border of the WSA. Five additional test holes were also drilled within the southeast-central portion of the WSA. This exploration, which occurred between 1979 and 1981, detected only sub-economic uranium mineralization. No evidence of assessment work or intents to hold were filed for 1981. Because of the lack of recordation, as well as previous indications by the Energy Reserves Group, it is assumed that these claims have been abandoned.

When economic and political conditions again favor the uranium industry, the region containing the WSA could be a target for exploration.

3. Saleable

Thick sand and gravel deposits occur locally within the Quaternary alluvium, the Baca formation, and the volcanic sediment facies of the Datil formation. These deposits comprise a large portion of the WSA's surface. The majority of the material consists of gravels and cobbles of quartzites, quartzose sandstones, arkosic sandstones, and assorted volcanic rocks. A moderate favorability for the identification of economic sand and gravel deposits exists within the WSA.

There are several excellent sources of cinders within the WSA. These cinder cones are associated with flows of Quaternary basalts. The WSA's cinder deposits are of excellent quality and could be used for any of the typical lightweight aggregate or landscaping purposes associated with this type of material.

Small deposits of petrified wood have been found within the Baca formation. The scientific value of the wood is minor, but the deposits could provide areas for specimen collecting.

There have been no recorded sales of common variety minerals from the WSA. Potential gravel resources could possibly be needed for improving roads adjacent to the WSA. The excellent cinder deposits within the WSA have poor access which reduces their economic significance. Development of these resources would depend on future population increases within the vicinity due to their high bulk, low value nature.

B. Watershed

Eagle Peak is located within the Blaines Lake and Quemado watersheds. All lands within these watersheds have been classified as productive areas. Most of the area has been rated as being in the moderate erosion class, although some areas in the WSA are in a critical erosion class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. A watershed plan will be developed on portions of the Mesa Ranch and watershed work will be done to improve the critical erosion areas to moderate. Runoff averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments are within the Eagle Peak WSA. The four allotments graze livestock in the WSA and utilize a year-round cow/calf operation. The Rancho Allegre Cattle Company and Eager-Red Hill allotments have approved Allotment Management Plans (AMP) in cooperation with the BLM. These AMPs consist of planned rangeland developments and scheduled livestock moves. Most of the planned rangeland developments have been constructed. The Largo Creek and Mesa Ranch allotments graze livestock in the WSA according to forage availability.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Rancho Allegre	79,578	11,880	26,820	34%
Eager-Red Hill	5,220	864	2,230	43%
Largo Creek	5,059	708	770	15%
Mesa Ranch	3,599	504	2,929	81%
TOTAL			32,748	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage condition, supplementing salt or protein, livestock water availability, breaking ice on livestock waters, and performing maintenance on fences, dirt tanks, a windmill, and pipelines. Most of the daily ranch operation is conducted using pickups or other vehicles. Normal maintenance of various rangeland developments would include motorized vehicles such as a pickup truck, a bulldozer to clean the dirt tanks, a tractor with backhoe to repair or replace pipeline, and a drill rig to maintain the windmill.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Rancho Allegre	16 5/10 miles of interior fence 11 miles of boundary fence 5 dirt tanks 3 miles of pipeline 2-5,000 gallon storage tanks 2 drinking troughs
Eager-Red Hill	2 dirt tanks 1 windmill 2 drinking troughs 6 miles of fence
Largo Creek	1 dirt tank
Mesa Ranch	4 miles of boundary fence

Note: ^{a/}Information shown in tables reflects only Federal Acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned within the WSA at this time.

D. Timber Harvest

The Eagle Peak WSA is generally of an open character with scattered pinyon and juniper woodlands occurring on the ridges, mesa sides, and hilly areas. The woodlands are composed primarily of one-seed juniper, except in the southern portions of the WSA where pinyon pine is mixed with the juniper. Most of these woodlands are of small size and volume, being in open stands and occurring on the steeper terrain of the area.

Past use of the area's woodland resources has been limited primarily to one area 1/2 mile southeast of the Eagle Peak WSA just north of the Burnett Ranch Headquarters.

Eagle Peak contains approximately 8,430 cords of standing greenwood. For this reason, the WSA has a potential for firewood and post cutting. This potential is enhanced by the easy accessibility afforded by the numerous vehicle routes which exist in the area.

Since the woodcutting area was authorized southeast of the WSA boundary, people are familiar with this portion of the WSA. As a result, illegal woodcutting has taken place throughout the area. Both illegal and legal woodcutting trends, as supported from past sales and contacts, will continue to increase. Controlling the growing illegal use of the woodlands may become more of a management problem than the authorizing of proper use.

E. Recreation

Current recreational use is limited primarily to deer hunting, rockhounding, and some exploring. Recreational off-road vehicle (ORV) use is also associated with these activities. Zuni Salt Lake, adjacent to the northern portion of the WSA, draws sightseers and those interested in the history of the area.

The area offers opportunities for backpacking, hiking, camping, nature photography, and other activities. Presently, there is little recreational use in the WSA. This is probably the result of limited public knowledge of the recreational resources present, uncertainty over land ownership, and distance from population centers.

ORV and other recreational uses in this area may increase in the future if coal development occurs in the Fence Lake area north of the WSA. If this development occurs, it is anticipated that the Quemado area would experience an increase in vehicle-dependent recreation.

F. Education/Research

The cultural resources and volcanic features present in the WSA offer unique opportunities for archaeological and geological research.

Opportunities for environmental education exist based on the wildlife, vegetation, geology, and cultural resources present in the WSA. The distance from population centers, however, would probably limit the direct use of the area for environmental education.

G. Native American

As was noted earlier, Zuni Salt Lake (on private land north of the WSA) is an important Native American religious site. However, it is not known at this time if religious uses centered at Zuni Salt Lake also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land within the WSA withdrawn.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of the Mandatory Wilderness Characteristics

a. Naturalness

The Eagle Peak WSA has diverse landforms ranging from sandstone mesas and volcanic cinder cones to gently rolling hills and lava flows. Vegetation in the WSA is characterized by scattered pinyon-juniper woodlands interspersed among short grasslands.

The human impacts in the WSA consist of rangeland developments and access routes which support livestock grazing. The Eagle Peak WSA contains 12 livestock watering structures (dirt tanks and drinking troughs along pipelines), 2 storage tanks, 1 windmill, about 38 miles of fences, and 3 miles of inconspicuous buried pipeline. Access to these rangeland developments is provided by 45 miles of vehicle routes. These vehicle routes vary in quality from dim two-track ways to well used major ranch access routes.

The impacts in this WSA are not typically screened from view by topography or vegetation. This lack of screening causes existing impacts to extend their visual influence over a wide area.

The impacts in the WSA are the result of rangeland developments in support of ranch operations, which would be allowed to continue under BLM wilderness management. This would include necessary vehicular access for ranch operations and maintenance of rangeland developments. Under wilderness management, necessary access needs would be defined and other routes would be closed. This would reduce but not eliminate the impacts of vehicular use on naturalness in the WSA.

Because impacted areas occur in all but the extreme eastern portion of the WSA, there appears to be little potential for boundary adjustments to improve the naturalness of the WSA.

The cumulative effect of human impacts is considered to reduce the level of perceived naturalness in the Eagle Peak WSA.

b. Solitude

The Eagle Peak WSA has numerous topographic features and wooded areas which provide opportunities for solitude. These opportunities are greatest in the wooded mesas of the extreme eastern part of the WSA and the mesas and canyons in the southern and southwestern portions of the WSA.

Higher elevations of the WSA, because of the greater visibility afforded, offer less potential for avoiding the evidence of human activities than the well-screened canyons and mesa edges.

c. Primitive and Unconfined Recreation

Opportunities for primitive recreation in the WSA consist primarily of deer hunting, sightseeing, hiking, and camping. Sightseeing opportunities are provided by the geology of the area, which includes sandstone mesas and volcanic cinder cones. The geology of the area also provides some rockhounding opportunities for small pieces of petrified wood and agate. Large raptors, including golden eagles, add interest to sightseeing in the WSA. Deer and pronghorn also may be seen, but are not common. The cultural resources of the area, especially the rock art which can be found on many of the sandstone mesas, also provide sightseeing opportunities. The geology and wildlife add interest to hiking or camping in the WSA. Extended camping would be limited, however, by the lack of water other than livestock waters for recreational users. Deer hunting occurs in the WSA, but is limited by low populations of mule deer.

2. Special Features

The Eagle Peak WSA contains significant archaeological values representing human habitation since archaic times (approximately 6000 BC). Volcanic features, including a series of cinder cones, also add significance to the area. The WSA also provides habitat which supports year-round use by golden eagles and occasional use by wintering bald eagles.

3. Multiple Resource Benefits

The Eagle Peak WSA contains a variety of natural values, including archaeological resources, interesting geologic features, large raptor habitat, and watershed values.

Congressional designation as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would the administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Eagle Peak WSA as being in the Colorado Plateau Province with a potential natural vegetation of 11,572 acres of grama-galleta steppe and 21,176 acres of pinyon-juniper woodland.

b. Distance From Population Centers

The WSA is within 5 hours driving time from Albuquerque and 5 1/2 hours driving time from Las Cruces, New Mexico.

B. Manageability

Subsurface ownership patterns present a significant problem for management of the WSA as wilderness. Mineral rights under 5,640 acres of public land are in state ownership. These split estate lands are concentrated in the center of the WSA, but are also found in scattered sections throughout the WSA. The extent and location of these inholdings produce a WSA with extremely awkward boundaries.

The impacts to wilderness values in the WSA from providing access to these subsurface inholdings is difficult to assess at this time. However, incompatible uses are expected to occur because private rights exist in an area believed to have moderate uranium potential and an excellent source of cinders.

Surface ownership patterns include 360 acres of private and 80 acres of state land inholdings. While not as extensive as the subsurface inholdings, providing access to these surface inholdings would also create manageability problems.

A large number of rangeland developments are located in the WSA. BLM wilderness management policy allows for the continued existence and necessary maintenance of rangeland developments. Necessary access routes for ranch operations and for the maintenance of existing rangeland developments will also have to be determined. By allowing only necessary access, the impact of ranch operations could be lessened. Some unused access routes would revegetate, thereby improving the impression of naturalness in the WSA.

The general lack of topographic barriers to vehicular access and the number of vehicle routes which presently provide access into the WSA will complicate wilderness management. Some routes could be physically closed, but it would require extensive patrolling and public information to completely eliminate unauthorized uses, such as ORVing or illegal woodcutting, from the WSA.

Manageability of the area as wilderness would require the acquisition through voluntary exchange of 5,640 acres of state-owned mineral rights, 80 acres of state-owned surface lands, and 360 acres of private surface inholdings. This would reduce the possibility of incompatible uses occurring in the WSA if it is designated as wilderness, and reduce problems arising from providing reasonable access to these inholdings.

V. PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considering public comment obtained from a variety of sources, including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement.

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited included: the type of landforms and the expanse of grassland in the WSA would add diversity to the wilderness preservation system; the need to preserve significant raptor habitat and good pronghorn habitat; and high cultural resource values and scenic values. It was also noted that existing livestock operations would continue under wilderness management.

Opposition to wilderness designation of the Eagle Peak WSA has centered around conflicts with mineral and livestock interests. A large number of Catron County residents are opposed to additional wilderness areas in the County. Reasons for opposition included: the lack of naturalness due to rangeland developments; the lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on livestock operations; and the impacts of wilderness designation on future economic development of Catron County.

Nineteen letters and fifty-two coupons were received during the public comment period on the draft version of this report.

Fourteen letters and the coupons indicated disagreement with the Area Manager's unsuitable recommendation. Among the reasons cited in support of designation were the benefits of wilderness to wildlife and the additional protection which wilderness designation would provide to cultural resources inside the WSA and to Zuni Salt Lake, which is near the northern boundary of the WSA. There was also disagreement with the assessment of the manageability problems resulting from the extensive mineral inholdings in the WSA.

The benefits of wilderness designation on the wildlife and cultural resources in the WSA were considered by the Area Manager prior to making the initial recommendation. The effects of designation on Zuni Salt Lake, although outside the WSA, were also considered in the draft version of this report. The BLM has long recognized the importance of Zuni Salt Lake and has placed a buffer zone with a no surface disturbance stipulation on lands surrounding the Lake (BLM, Divide Management Framework Plan 1983).

In assessing the manageability problems associated with the non-Federal mineral rights, it was determined that these private rights presented significant wilderness management problems. It was also noted that the acquisition of these mineral rights through a voluntary exchange would enhance the manageability of the WSA as wilderness. The disagreement with BLM's assessment indicated by public comments resulted in a reexamination of the draft. This reexamination and a review of the BLM's Wilderness Study Policy and Wilderness Management Policy indicate that the manageability of the WSA was assessed properly in the draft version of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 32,748 acres of public land within the Eagle Peak WSA would be recommended suitable for wilderness designation. (See Map 17 for WSA boundary.)

Under the All Wilderness Alternative, the impacts to wilderness values could be significant in the long-term. The impacts to air and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the area is recommended suitable for wilderness designation, additional mineral surveys would be conducted by the U.S. Geological Survey and U.S. Bureau of Mines to augment current information. These additional mineral surveys would be considered before a final decision on wilderness designation is made by Congress.

a. Leasable

Under existing laws, wilderness designation would preclude the issuance of new mineral leases.

The WSA has low favorability for the discovery of oil and gas or geothermal resources. Because of the low favorability for economic occurrences of oil and gas or geothermal resources, wilderness designation would result in insignificant impacts to these resources.

b. Locatable

Location, prospecting, exploration, development, and patenting of new mining claims under the mining laws would not be allowed after wilderness designation.

Development work, extraction, and patenting would be allowed to continue only on valid claims located before designation. These activities would require a plan of operations approved by the BLM. In approving plans of operations, the BLM must protect the rights of the operator while minimizing impacts on the wilderness resource.

In the Eagle Peak WSA, it is assumed that any future mining claims would be for uranium. Although the area is favorable for uranium mineralization, present information would suggest little impact to the local uranium industry since larger areas with similar or better potential are open to exploration and development.

c. Saleable

No permits to remove materials such as sand and gravel or cinders would be issued in designated wilderness areas. This would not affect local supplies since many alternate sources are found outside of the WSA.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Watershed management actions to reduce erosion in a critical watershed management area would be impacted by wilderness designation. Structural and treatment measures prescribed in the Divide Planning Area Management Framework Plan (MFP), including the construction of detention dams, pinyon-juniper removal, and watershed tillage, would be restricted under wilderness management.

Over time, wilderness management would protect water, soils, and vegetation by reducing surface disturbance and preserving the natural ground cover in the WSA. These benefits could be substantial if regional coal development occurs. Under these circumstances, it is expected that wilderness management would preclude increased off-road vehicle use in the area. This would reduce watershed problems resulting from ruts and vehicle scars and subsequent erosion.

b. Wildlife

There would be few short-term impacts of wilderness designation on wildlife in the Eagle Peak WSA. The impacts derived from the elimination of vehicular access would include reduced potential for harassment and poaching of wildlife and a reduction in hunting pressure.

Over the long-term, wilderness management would serve to protect the natural values, including the natural distribution and abundance of wildlife species which presently exist in the area. These long-term impacts would increase significantly if the region is found to be suitable for coal production. This would accelerate the human impacts on nonwilderness areas and increase the value of undisturbed areas for wildlife habitat.

The impacts of wilderness designation on threatened or endangered animal species were assessed in a biological assessment covering bald eagles, peregrine falcons, and black-footed ferrets. It was determined that wilderness designation would have no impact on these species.

c. Visual

Existing visual resources would be protected since the area would be managed under the more restrictive Visual Resource Management Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activities would be permitted under a Class I designation.

d. Cultural

The elimination of motorized access would reduce the chance of pothunting. Natural values on lands adjacent to Zuni Salt Lake, an important Native American religious and cultural center, would be protected. This would reduce the possibility of incompatible uses interfering with the cultural and religious uses and significance of the area.

Wilderness designation would complicate, but not necessarily preclude, stabilization, excavation, and research at archaeological sites in the WSA. These activities may be permitted by the State Director in consultation with the State Historic Preservation Officer on a case-by-case basis, where the project would not degrade the overall wilderness character of the WSA and when such activity is needed to preserve the particular resource.

Wilderness designation would also enhance scientific and educational values by preserving the natural environmental setting of the archaeological resources present in the WSA.

e. Livestock Grazing

The WSA presently supports 5,102 animal unit months; these grazing levels would not be impacted by wilderness designation. Grazing is a permissible and compatible activity in wilderness; however, limitations on vehicular access could be imposed to protect wilderness characteristics.

It is anticipated that few additional rangeland developments would be needed to improve grazing management in the WSA. For this reason, wilderness designation would not have significant impacts on livestock grazing in the WSA. It should also be noted that in many cases, wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from limitations on design and placement rather than the prohibition of new rangeland developments.

Wilderness designation would result in the modification of the current Allotment Management Plan (AMP) for Eager-Red Hill and the development and implementation of AMPs for the Mesa Ranch and Largo Creek allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

Restrictions on vehicle use inside the designated area could reduce vandalism of rangeland developments and other problems resulting from vehicle-dependent recreational and other uses.

If the region experiences a population increase as a result of coal development north of the WSA, the benefits to livestock operations from closing the area to unauthorized vehicle use could be substantial.

f. Timber Harvest

The WSA's forest resources would not be available to meet the rising demand from local communities for wood products. This would result in moderate impacts to the total available woodlands in the area.

g. Recreation

Recreation activities which require motorized vehicles would be forgone. This would not be a serious impact to current uses since

the area is presently not used to a great extent. Possible regional coal development could increase the amount of vehicle-dependent recreation in the area. Wilderness designation of the Eagle Peak WSA would reduce the acreage available for this type of use.

The impacts to vehicle-dependent recreation would be balanced by benefits to nonmotorized recreation. By preserving the solitude and natural values in the Eagle Peak WSA, wilderness designation would ensure that opportunities for primitive recreation which now exist would continue to be available to meet future needs.

h. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection. However, several factors could impact the BLM's ability to manage the Eagle Peak WSA as wilderness in the long-term. Mineral development on 5,640 acres of state-owned mineral rights could occur. This development could significantly impact the WSA's wilderness values.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 32,748 acres of public land within the Eagle Peak WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing, fuelwood sales, and coal exploration and development in the region and possibly in the WSA.

These potential uses could result in significant impacts to wilderness values in the long-term. Impacts to air and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Eagle Peak WSA would not be provided with long-term Congressional protection.

New rangeland developments, fuelwood sales, and mineral exploration could result in significant long-term degradation of wilderness values.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Management actions, including watershed tillage and water control structures, would be conducted as described in the Divide MFP (BLM 1983). The specific locations and types of projects would be identified in a site-specific watershed plan to be developed for the area.

Continued vehicular access for ranch operations, recreation, mineral exploration, and woodcutting could result in additional surface disturbance.

b. Wildlife

If significant increases in human activity occur in the area as a result of livestock grazing, fuelwood sales, and coal development in the region, wildlife habitat could be degraded and wildlife harassment and poaching could increase.

c. Visual

Most of the WSA would be managed as VRM Class III which allows moderate changes in the landscape. A portion of the WSA would be managed as VRM Class II which allows minor to moderate changes in the basic elements of the landscape as a result of management actions as long as the changes do not attract attention.

d. Cultural

There would be no impacts to possible research or stabilization projects. New rangeland developments, fuelwood sales, and regional coal exploration and development could increase human activity in the area and could create a greater potential for archaeological vandalism.

e. Minerals

There would be no impacts to minerals under this alternative. Exploration and development would be regulated to prevent unnecessary and undue degradation. No economic benefits would be lost.

f. Livestock Grazing

There would be no impacts to livestock grazing.

g. Timber Harvest

There would be no impacts on the use of the forest products in the WSA. If coal development occurs in the region, it could result in increased unauthorized woodcutting.

h. Recreation

There would be no impact to present low levels of recreational use. The area would remain open to vehicle-dependent recreational uses.

APPENDIX R

HORSE MOUNTAIN WSA (NM-020-043)

I. GENERAL DESCRIPTION

A. Location

The Horse Mountain Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 25 air miles southwest of Datil.

The U.S. Geologic Survey (USGS) topographic maps covering the WSA are the Wallace Mesa, Los Canyon, Horse Mountain West, and Horse Mountain East quadrangles. All of these are New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

Horse Mountain is characterized by a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September as a result of brief, but often heavy thundershowers. Winter is usually the driest season. Annual precipitation averages about 14 inches over the entire WSA, with the lower elevations averaging 12 to 13 inches and higher elevations 16 inches. Average annual snowfall in the area is 2 to 3 feet in most localities.

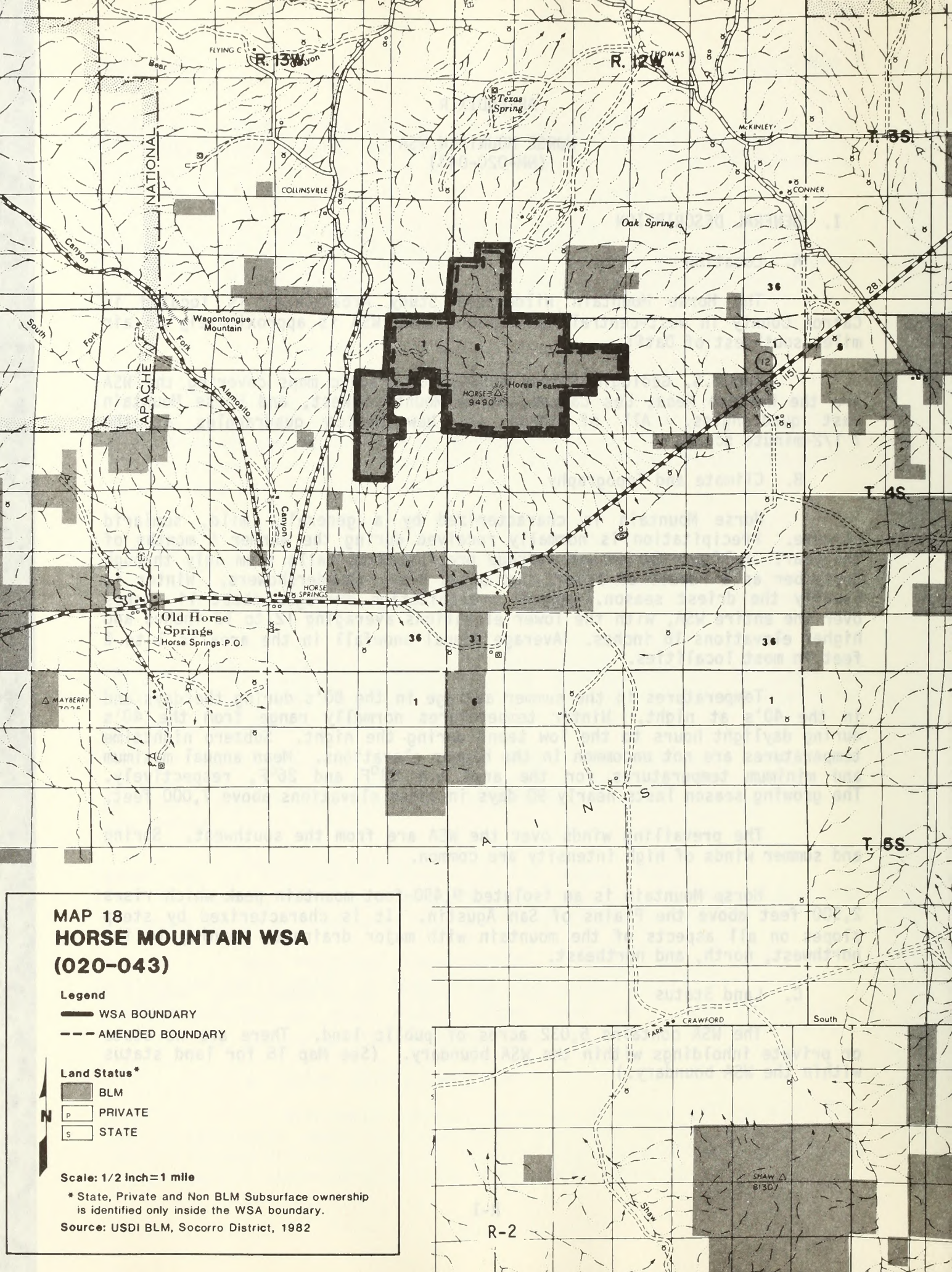
Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens during the night. Subzero nighttime temperatures are not uncommon in the higher elevations. Mean annual maximum and minimum temperatures for the area are 63°F and 26°F, respectively. The growing season lasts nearly 90 days in those elevations above 7,000 feet.

The prevailing winds over the WSA are from the southwest. Spring and summer winds of high intensity are common.

Horse Mountain is an isolated 9,490-foot mountain peak which rises 2,500 feet above the Plains of San Agustin. It is characterized by steep slopes on all aspects of the mountain with major drainages running to the northwest, north, and northeast.

C. Land Status

The WSA contains 5,032 acres of public land. There are no state or private inholdings within the WSA boundary. (See Map 18 for land status within the WSA boundary.)



MAP 18
HORSE MOUNTAIN WSA
(020-043)

Legend

- WSA BOUNDARY
--- AMENDED BOUNDARY

Land Status*

- BLM
PRIVATE
STATE

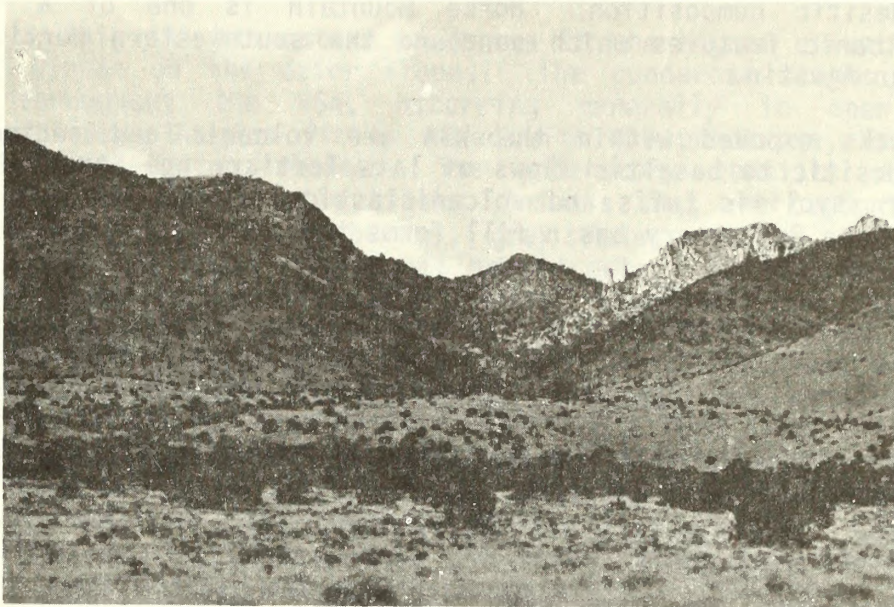
Scale: 1/2 Inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982

D. Access

Physical access to the Horse Mountain WSA is provided by unimproved two-track ways which originate along two County roads (B040 and B034) to the west and north of the WSA. State Highway 12 from Datil to Reserve is the major paved route in the area.



Horse Mountain from State Highway 12

II. EXISTING RESOURCES

A. Geology

The Horse Mountain WSA is located within the Datil-Mogollon Volcanic Plateau. This area is transitional between the Basin and Range Physiographic Province and the Colorado Plateau. The major geologic feature of the WSA is Horse Mountain, a composite strato-volcano of basaltic-andesitic composition. Horse Mountain is one of a series of Tertiary volcanic features which surround the southwestern portion of the Plains of San Agustin.

Rocks exposed within the WSA are volcanic and sedimentary in nature. Andesitic to basaltic flows of late Tertiary age have intruded and capped older rhyolitic tuffs and volcaniclastics of the Mid-Tertiary Datil formation. Some Quaternary basin fill forms the surface of the southwestern "dog leg" of the WSA.

A small uplift of Triassic and Permian rocks occur outside the WSA, 2 miles south of Horse Peak. These rocks suggest that Triassic and Permian sandstones and limestones extend beneath the volcanic pile forming Horse Mountain. Data from a deep well drilled near the center of the Plains of San Agustin indicate that the Mesozoic and Paleozoic rocks unconformably overlie Precambrian Gneiss at depth.

B. Water

The WSA is located within the Plains of San Agustin, a closed basin, with interior surface water drainage.

No permanent streams or surface water bodies exist within the WSA boundary. The many alluvial arroyos and canyons which drain Horse Mountain contain runoff during the more intense storms but runoff soon disappears into alluvial fans and fill of surrounding lowlands.

Wells in the Horse Mountain area range in depth to water from 18 to 200 feet, but most are less than 100 feet to water. The general direction of ground water movement is southeast and southwest, but volcanic and structural features present make local interpretations of movement difficult. Most runoff is down mountain canyons until it reaches the fracture zones in igneous rocks of the Datil formation and the overlying Quaternary age alluvial deposits which are the principal aquifers in the WSA. Analysis results from a number of wells in the Horse Mountain area indicate water of suitable chemical quality for livestock purposes. Instantaneous flow rates for these wells range from 1 to 6 gallons per minute.

C. Soils

Soils in the WSA have textures that range from cobbly loams to clays and are shallow over basalt or tuff. Approximately 30 percent of the soil mapping unit is rock outcrop. The rock outcrop unit occurs on steep woodland side slopes and ridges. It has potential erosion problems associated with slopes of 25 to 60 percent. This erosion potential is reduced somewhat by cobbles and stones on the surface.

D. Vegetation

1. General

The following Standard Habitat Sites (SHS's) are present within the Horse Mountain WSA:

Ponderosa-Pinyon Mountain (3,982 acres)

This SHS has mature ponderosa in the higher elevations with a mixture of pinyon on the drier slopes. The ponderosa stands are fairly extensive throughout the WSA, occurring generally in open semi-pure compositions. Some Douglas fir is mixed with the ponderosa, especially on the wetter north-facing slopes. The understory consists of mountain mahogany, oak, and rubber rabbitbrush. Animals that are commonly found in this SHS include mule deer, burros, gray foxes, golden eagles, turkey vultures, red-tailed hawks, and great horned owls. Other animals that are occasionally found include elk, black bears, mountain lions, bobcats, and bald eagles.

Blue Grama-Snakeweed Hill (1,050 acres)

Found primarily on lower hills next to mountains, the primary plant species within this SHS are broom snakeweed and blue grama, although fringed sage, winterfat, and squirreltail are also present. Common animal species in the SHS include coyotes, kit foxes, pronghorn, striped skunks, jackrabbits, prairie dogs, and desert cottontails.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of 13 species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Horse Mountain WSA supports approximately 299 wildlife species, including 53 reptile and amphibian species, 71 mammal species, and 175 resident and migratory bird species. A description of characteristic wildlife species present in the WSA is included in the SHS discussion in the Vegetation section.

2. Threatened or Endangered Fauna Species

The Horse Mountain WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles and peregrine falcon, both Federally-endangered species.

F. Visual

Horse Mountain is characterized by abrupt elevation differences, dense and varied conifer forest vegetation, and a wide variety of shapes, colors, and textures, which are often spectacular in seasonal combination.

These scenic qualities, and Horse Mountain's proximity to State Highway 12 have resulted in a Visual Resource Management (VRM) Class II rating for the WSA.

In addition to the scenic qualities within the WSA, numerous vantage points up to 2,500 feet above the surrounding landscape offer sweeping vistas. Features over a hundred miles away can be seen on a clear day.

G. Cultural

There are no documented archaeological sites within the Horse Mountain WSA. Based on limited field surveys, the potential for the existence of sites is considered to be low.

H. Air

Generally, the quality of air within the Horse Mountain WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when southwest-prevailing winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

No oil and gas exploration wells have been drilled within the WSA. The closest exploration well to the WSA was a 12,284-foot dry wildcat well, approximately 18 miles east of Horse Peak. This well, and outcrops at the southern base of Horse Mountain, suggest that a sequence of possible petroleum source and reservoir rocks, Cretaceous, Permian, and Mississippian in age, lie at depth below the volcanics comprising Horse Mountain. Within the region a few oil and gas wells have tested this sequence with negative results.

The U.S. Geological Survey (USGS) has classified the area containing Horse Mountain as being prospectively valuable for oil and gas. Despite this classification, the local volcanic activity, and the poor results of oil and gas wildcats in the region, it is doubtful that economic oil and gas resources are present beneath the WSA.

The northern and southwestern extensions of the WSA are noncompetitively leased for oil and gas. No other leases or lease applications are on record.

The majority of the WSA could probably be leased noncompetitively, but it is doubtful that any serious future exploration would occur within the WSA unless some encouraging wells were drilled within the region.

Although low, some anomalous heat flow is indicated within the vicinity of the WSA. This is common to the region as a whole, due to the abundant Tertiary to Quaternary volcanics. Much more significant anomalies exist near more populated areas in the region.

2. Locatable

Although no direct evidence of base or precious metal mineralization has been identified within or near the Horse Mountain WSA, the geologic environment is moderately favorable for their existence. The rhyolite flow outcropping around the periphery of Horse Mountain is a portion of the Datil formation which hosts tin mineralization 35 miles south of the WSA. Outcrops of uplifted Permian limestones at the southern foot of Horse Mountain indicate that rhyolite may have interacted with limestone at depth. Limestone/rhyolite interactions are classic geologic environments associated with base and precious metal deposition. Thus, the geologic environment is favorable for base and precious metal mineralization.

There has been very little recorded exploration for locatable minerals in the vicinity of the WSA. The WSA has been segregated from the general mining laws since 1970 and no claim locations within the WSA have been filed with the BLM.

If economic conditions encourage the development of more domestic sources of base metals, areas such as Horse Mountain could become targets for deep exploration. Even if geochemical anomalies are not surficially present, the shallow limestones at the base of Horse Mountain would be likely targets for the search of mineralized rhyolite/limestone interactions.

The Tertiary volcanic sediments along the periphery of Horse Mountain are a potential environment for uranium and thorium deposits. Despite this potential, regional information suggests there is low favorability for discovery.

3. Saleable

Numerous outcrops of basalt and rhyolite (including pumiceous tuffs) occur within the WSA. The rock is of sufficient quantity and quality to be used as construction aggregate or for decorative purposes.

No material sales or free use permits have been issued within the WSA. High quality construction aggregates exist outside of the WSA near State Highway 12 in the form of gravels and limestones. It is doubtful that any demand for common variety minerals would be directed at the WSA.

B. Watershed

Horse Mountain is within the Horse Springs watershed. No areas in the WSA have been classified as having critical erosion problems. There have been no projects for land treatments or erosion control in the WSA. Runoff in the WSA averages 0.5 to 1 inch per year with erosion amounts of 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are within the Horse Mountain WSA. The West, East, and North Horse Mountain allotments utilize a year-round cow-calf operation.

Much of the WSA is rarely grazed by livestock due primarily to the lack of permanent water and inaccessibility of the area to livestock. The lower elevations of the WSA on the West Horse Mountain allotment are grazed year-round by livestock. Any livestock grazing that takes place in the higher elevations of the WSA usually occurs during the frost-free period or when snow is not present.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
West Horse Mountain	3,959	672	2,959	75%
East Horse Mountain	2,548	240	1,993	78%
North Horse Mountain	720	72	80	11%
TOTAL			5,032	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage conditions, livestock water availability, placement of salt and protein supplements, and performing normal maintenance on boundary fences.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
West Horse Mountain	3 miles boundary fence 3 dirt tanks
East Horse Mountain	1/2 mile pipeline 1 windmill (no longer functional) 1 1/2 miles boundary fence
North Horse Mountain	1/4 mile boundary fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

A spring has been proposed for development on the East Horse Mountain allotment. This development would replace the windmill which is no longer functional.

One mile of pipeline with two drinking troughs and 1 1/4 miles of fence have been proposed in the AMP for the West Horse Mountain allotment. This development is designed to improve distribution of cattle by adding two pastures which will reduce grazing pressure in pastures in poor condition outside the WSA.

D. Timber Harvest

There is currently no authorized use of the woodland resources on Horse Mountain.

There are roughly 2,462 acres of ponderosa pine stands in the WSA. Assuming an average of 1,518 board feet per acre, there is a total of 3.7 million board feet standing timber in the area. Stocking of ponderosa pine in the Horse Mountain WSA is the highest in the Las Cruces District, but still is low for the potential of the site.

The pinyon-juniper stands are of low volume per acre making them marginally useful as sources of firewood, posts, Christmas trees, and other woodland products.

Past use of the area has consisted of two timber sales and a small amount of fuelwood harvesting (5 permits for 30 cords of dead and down pinyon-juniper). The timber sales, which ended in 1960, covered 275 acres and removed approximately 200,000 board feet of timber.

Future commercial use of the forested lands on Horse Mountain would require intensive timber management including selective cutting to take out the mature decadent trees. Sanitation harvesting and other silvicultural prescriptions, primarily controlled and natural fires, would be important applications to the ponderosa stands to promote regeneration opportunities if the commercial potential of the stands is to be maintained or improved, and utilized.

The present stand conditions represent a declining trend in the succession of a ponderosa pine forest. If no management is applied to these stands, most of the ponderosa stands in the WSA would be eliminated over the next 200 years as a result of past harvesting methods, a general lack of reproduction, grazing pressure, lack of wildfires, low stand vigor, and an ever-increasing encroachment of the pinyon-juniper.

E. Recreation

Horse Mountain is an isolated mountain peak and the view from the summit offers a spectacular 360° panorama. There are also isolated outcrops of volcanic rock which provide localized areas of geologic interest. Opportunities for recreation consist of deer hunting, various kinds of sightseeing, photography, hiking, camping, and off-road vehicle use.

The WSA has been withdrawn from appropriation under the general mining laws since 1970. This classification was designed to protect high recreational values in the WSA.

Current hunting use is limited primarily to big game based on the moderate deer population. Bear and mountain lion are also present in the WSA and are occasionally hunted. Other recreational uses in the area are presently limited by the low levels of public knowledge of the area, the distance from population centers, and the lack of legal access.

F. Education/Research

The WSA is not currently being used for any research or education projects. The isolated mountain does create an "island ecosystem" with diverse wildlife habitat and population characteristics, which could be the subject of research.

These same characteristics also result in opportunities for environmental education. However, the distance from population centers reduces the potential for actual use of the area for environmental education.

G. Native American

There are no known current or potential Native American religious sites within the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been issued nor are any pending in the WSA.

The lands within the WSA have been segregated since 1970 from appropriation under the general mining laws (NM 9688 Group II, published in Vol. 35, No. 154, of the Federal Register on August 8, 1970). This classification precludes the filing of mining claims, but does not affect mineral leasing.

I. Wildlife

A wildlife habitat management plan (HMP) has been developed for Horse Mountain in cooperation with the New Mexico Department of Game and Fish (NMDGF). It is designed to improve and protect habitat for bald eagles, mule deer, pronghorn, elk, Merriam's turkey, tassel-eared squirrels, harlequin quail, and cavity nesting birds. The objectives of the plan are to create more roosts, water sources, and prey species for bald eagles and to produce more forage for elk, mule deer, and pronghorn. Actions proposed in the plan include prescribed burning (interseeding with 40 percent grass, 30 percent forbs, and 30 percent browse), construction of two wildlife waters, and fencing off some reservoirs. When implemented, these actions will increase the potential of the area as wildlife habitat.

The area has not been identified by the NMDGF for the reintroduction of any species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Horse Mountain WSA contains relatively little evidence of human use. The human impacts which exist in the WSA consist of rangeland developments (3 dirt tanks, 1 windmill, 1/2 mile of pipeline, 4 3/4 miles of fence), 7 miles of vehicle routes, and the evidence of past logging operations which cover about 275 acres. The old logging access routes, which are the most noticeable of these impacts, would generally return to a natural condition under wilderness management. Because of good logging practices and the 20 years that have elapsed since operations ceased, the past logging does not significantly reduce the apparent naturalness of the WSA.

Approximately 600 acres in the southwestern portion of the WSA are open grassland. This area is adjacent to a County road, fence line, and ranch house, and is crossed by an access route to the West Horse Mountain ranch headquarters. These impacts are not well screened by topography or vegetation and are considered to reduce the apparent naturalness of this portion of the WSA.

The forested, mountainous portion of the WSA has been only lightly grazed and the few human impacts present are well screened by topography and vegetation. These combined factors produce a high degree of naturalness in this portion of the WSA.

b. Solitude

Horse Mountain rises over 2,500 feet above the Plains of San Agustin. This elevation difference enhances the feeling of remoteness from the few human activities outside the WSA which are visible from the mountain.

The only significant impact on solitude from activities occurring outside the WSA results from military training flights over the WSA. These low altitude overflights are intermittent and the impacts are of short duration.

In the WSA itself, the rugged topography with its numerous forested ridges and valleys provides outstanding opportunities for solitude which might not otherwise be so abundant in a WSA of this size.

c. Primitive and Unconfined Recreation

The rugged mountain environment, with its ponderosa pine forest and numerous small meadows, provides an outstanding setting for hiking, camping, photography and other forms of backcountry recreation. Deer hunting accounts for most of the current recreational use in the WSA with other uses limited by the lack of legal access, distance from

population centers, and limited public knowledge of the area. Horse Mountain also provides opportunities for zoological sightseeing of such wildlife species as large raptors, deer, black bear, and mountain lion.

The numerous scenic vistas, forested mountain environment, and interesting geologic features on Horse Mountain result in hiking and camping opportunities which are considered equal to any in the region. These opportunities are limited only by the lack of recreational water sources.

2. Special Features

Wildlife and scenic values are significant special features of Horse Mountain. Wildlife values include habitat for large raptors such as golden eagles, wintering bald eagles, prairie falcons, and possibly peregrine falcons. The forested mountain environment also supports deer, elk, mountain lion, black bear, and javelina.

Scenic values are derived from the more than 2,500-foot difference in elevation between the summit of Horse Mountain and the surrounding Plains of San Agustin. This results in vistas which can extend for over 100 miles on a clear day. Scenic values are also enhanced by the mixed ponderosa and oak stands and interesting geological features found on the mountain.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Horse Mountain WSA as being within the Upper Gila Mountains Forest Province. The potential natural vegetation is 2,462 acres of ponderosa pine/Douglas fir forest, 1,970 acres of pinyon-juniper woodland, and 600 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time of Albuquerque and Las Cruces, New Mexico and 6 hours driving time from El Paso, Texas.

B. Manageability

The Horse Mountain WSA could be managed to preserve the wilderness values which presently exist. Manageability is a judgment made by the BLM

after considering such factors as: private and state inholdings, valid existing rights, topography, and the overall land ownership pattern.

The "topographic island" character of Horse Mountain presents few problems for wilderness management. The absence of private or state inholdings and private mineral rights within the WSA adds to the BLM's ability to manage the area as wilderness. The WSA has been segregated from appropriation under the mining laws since 1970, and there are no mining claims to complicate wilderness management.

The northern and southern portions of the WSA have been noncompetitively leased for oil and gas. These leases are post-Federal Land Policy and Management Act (FLPMA) and carry stipulations to protect wilderness values. Because of these stipulations and the low probability that they will be developed, these leases would not complicate wilderness management.

Grandfathered livestock operations in the WSA are compatible with wilderness management. Required access for ranch operations would not create problems for wilderness management.

The isolated mountain character of Horse Mountain results in a WSA with good physiographic integrity. This configuration would be enhanced by a boundary adjustment which would place the boundary along an existing vehicle route at the base of the mountain. This would eliminate approximately 600 acres of open rangeland from the southwestern portion of the WSA. This area is impacted by an access route to a ranch house and a pipeline and is adjacent to a fence line, County road, and ranch house. These impacts significantly reduce the naturalness of this portion of the WSA. While this boundary adjustment would result in a WSA under 5,000 acres, it would improve the naturalness of the WSA as well as provide a more definable boundary. The remaining 4,432 acres could be managed to preserve the quality of the wilderness characteristics.

Manageability of the WSA would also be enhanced by the future acquisition, through voluntary exchange, of portions of Horse Mountain which are outside the WSA boundaries. This would include up to 2,800 acres of state land adjacent to the WSA boundaries and would result in virtually the entire mountain being managed as wilderness.

V. PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

Opposition to wilderness designation of Horse Mountain during the inventory phase came from livestock interest groups and many citizens of Catron County. Reasons for this opposition included: "The area doesn't appear natural due to the presence of rangeland developments and past logging;" "any additional wilderness in Catron County will impede economic progress in this underdeveloped area;" and "the small size of the Unit reduces its value as wilderness."

Support for wilderness designation came from recreational users and those interested in preserving the natural values of the area. Reasons cited included: the biological diversity present in this "island" ecosystem, the outstanding scenic and recreational qualities, and the lack of resource conflicts or values forgone by wilderness designation.

Nineteen letters were received on the draft version of this report. One respondent was opposed to designation of the WSA because it appears to have a favorable geologic environment for base and precious metals and is prospectively valuable for oil and gas. These factors were considered by the Area Manager in his recommendation. The wilderness values of the Horse Mountain WSA outweigh the potential mineral resource conflicts associated with wilderness designation.

Eighteen comments supported wilderness designation for the Horse Mountain WSA. Factors such as the WSA's scenic values, wildlife habitat, biological interest, geologic features, and manageability as wilderness were cited as enhancing the WSA's wilderness values. As noted in the draft and final version of this report, the BLM also recognized these factors and reached similar conclusions concerning the wilderness values of Horse Mountain.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 5,032 acres of public land in the Horse Mountain WSA would be recommended suitable for wilderness designation. (See Map 18 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts to air, education/research, Native American uses, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the area is recommended suitable for wilderness designation, mineral surveys will be conducted by the U.S. Geological Survey and U.S. Bureau of Mines to augment current information. These additional mineral surveys would be considered before a final decision on wilderness designation is made by Congress.

Because of the low favorability for occurrences of oil, gas, or geothermal resources, moderate favorability for locatable minerals, and the existing mineral withdrawal, there would be insignificant impacts to minerals.

The exploration, development and production of minerals actually present in the WSA would be forgone by wilderness designation.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Wilderness designation would have no impacts to watershed management in the WSA. The WSA has not been identified as requiring any land treatments to reduce erosion.

In the long-term, wilderness management would protect watershed values by reducing surface disturbance and preserving the natural ground cover in the WSA.

b. Wildlife

Wilderness designation would limit, but not preclude management actions prescribed in the Horse Mountain Habitat Management Plan (HMP) designed to restore wildlife populations to their former levels through such things as vegetation manipulation and the construction of additional water sources.

Prescribed burning to reintroduce fire as a component of the natural ecosystem would be allowed. The prescribed burning would accomplish most of the vegetation manipulations called for in the HMP. Two additional wildlife water sources and the seeding of additional browse species have been planned for Horse Mountain. These waters and the fences necessary to protect them for wildlife use as well as limited seeding could be allowed under wilderness management.

Impacts of wilderness designation on wildlife would result primarily from the elimination of vehicular access into the WSA. This could reduce harassment, poaching, and hunting of game species. These reduced human impacts would complement the objectives of the HMP and would result in a more rapid increase in wildlife populations than would occur under nonwilderness management.

In the long-term, wilderness management would serve to protect natural values, including the natural distribution and abundance of wildlife species in the WSA. This is especially true for those species that are dependent on an undisturbed setting during critical times in their life cycles such as nesting birds, roosting bald eagles, and wintering mule deer.

In time, the gradual increase of human impacts on the lands surrounding the WSA would serve to increase the value of the undisturbed wilderness area for wildlife habitat.

c. Visual

Existing visual resources would be protected. The area would be managed as a VRM Class I, which allows modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

d. Cultural

Since there are no known archaeological sites in the WSA, wilderness designation would have no impact on cultural resource values on Horse Mountain.

e. Livestock Grazing

The WSA currently supports 672 animal unit months (AUMs); these grazing levels would not be impacted by wilderness designation. Grazing is a permissible and compatible activity in wilderness.

The proposed 1 1/4 miles of fence and 1 mile of pipeline on the West Horse Mountain allotment would not be constructed. This would affect efforts to reduce grazing pressure on lands outside the WSA.

Much of this WSA is presently worked by horseback because of the relatively small size and the rugged terrain of the area. For this reason, restrictions on casual vehicular access would not create serious impacts to livestock operations.

Vehicular access to the West Horse Mountain ranch headquarters across the "dog leg" on existing routes would be denied.

f. Timber Harvest

Forest resources, including an estimated 3.7 million board feet of ponderosa pine, would not be developed commercially. The loss of this timber to commercial markets would not be significant because of low standing volumes and the presence of extensive timber stands with higher commercial value on U.S. Forest Service land in the area.

Because of relatively low volumes per acre, the pinyon-juniper woodlands on Horse Mountain are only marginally useful as sources of firewood, fence posts, or Christmas trees.

g. Recreation

Vehicle-dependent recreational uses would be forgone under this alternative.

With the exceptions of trapping and deer hunting, recreational use is low in the Horse Mountain WSA. Present uses would continue under wilderness management but use patterns would be altered by the elimination of vehicular access inside the WSA.

By preserving the natural values and solitude which exist in the WSA, wilderness designation would ensure that recreation opportunities now present in the area would continue to be available to meet future needs.

h. Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and the management of the area to maintain wilderness values would produce significant impacts to wilderness.

B. Amended Boundary

Under the Amended Boundary Alternative, 4,432 acres of public land within the Horse Mountain WSA would be recommended suitable for wilderness designation (see Map 18 for amended WSA boundary). This amended boundary would exclude a "dog leg" of 600 acres of public land from the southwest boundary of the WSA. The new boundary would be along a vehicle route at the base of the mountain. The 600 acres excluded under this alternative are impacted by access routes and a fence.

Under this alternative, there would be a potential significant impact to wilderness values. Impacts to air, education/research, Native American uses, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

Under this alternative, impacts on 600 acres of lands which are presently leased for oil and gas would be eliminated. For the lands inside the amended boundary, impacts would be the same as those described under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Visual

The lands excluded from this boundary would be managed as a VRM Class II which allows for changes in the landscape as long as they do not attract attention. The lands within the amended boundary would be managed as a VRM Class I.

b. Livestock Grazing

This boundary adjustment would eliminate restrictions on vehicular access to the West Horse Mountain allotment and would eliminate 600 acres of the 7,599-acre operation from wilderness management. Impacts to the West Horse Mountain ranch operations would be reduced by allowing vehicular access to the headquarters and eliminating approximately 1 mile of fence and 120 AUMs (10 cattle year long) from the amended boundary.

The impacts to livestock operations inside the amended boundary would be the same as those described under the All Wilderness Alternative.

c. Wilderness Values

The 4,432 acres within the amended boundary possess the wilderness characteristics of naturalness and outstanding opportunities for solitude and primitive recreation. These lands have a mountainous forested character and are of sufficient size to make practicable their preservation and use in an unimpaired condition. In addition to these mandatory wilderness characteristics, the area contains diverse wildlife habitat and species, and high scenic qualities. The impacts to these wilderness values will be the same as those discussed under the All Wilderness Alternative.

d. Other Resources

Impacts to water, soils, vegetation, wildlife, cultural resources, timber harvest, and recreation would be the same as those described under the All Wilderness Alternative.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 5,032 acres of public land in the Horse Mountain WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be to provide for livestock grazing, wildlife habitat management, and recreation and scenic qualities. Horse Mountain would remain under administrative segregation from the mining laws.

Under the No Action/No Wilderness Alternative, significant impacts to wilderness values could occur.

1. Impacts to Wilderness Values

The wilderness values and special features of the Horse Mountain WSA would not be provided with long-term Congressional protection. Since existing and proposed plans do not identify activities which would impair wilderness values, Horse Mountain could probably retain its wilderness values in the short-term. However, in the long-term, the cumulative effect of range, wildlife, and forestry projects could have a significant impact on the WSA's wilderness values.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Continued vehicular access could result in additional ruts which could increase the potential for erosion.

b. Visual

The area would be managed as a VRM Class II which allows changes in the landscape's basic elements as long as the changes do not attract attention. In the long-term, the visual resources could be degraded.

c. Minerals

The Horse Mountain WSA would remain withdrawn from appropriation under the mining laws. Therefore, the impacts to locatable minerals would be the same as those described under the All Wilderness Alternative. There would be no impact to leasable or saleable minerals.

d. Other Resources

There would be no impact to wildlife, cultural resources, air, livestock grazing, timber harvest, recreation, or realty actions.

APPENDIX S

JORNADA DEL MUERTO WSA (NM-020-055)

I. GENERAL DESCRIPTION

A. Location

The Jornada del Muerto (Journey of Death) Wilderness Study Area (WSA) is located in Socorro and Sierra Counties in south-central New Mexico. The WSA is situated 45 air miles south-southeast of the community of Socorro.

The U.S. Geologic Survey (USGS) topographic maps covering the WSA are the Val Verde and Malpais Well, New Mexico quadrangles at the 15-minute scale.

B. Climate and Topography

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 95° to 105°F. Winter temperatures are generally mild during daylight hours (45° to 60°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 50 mph.

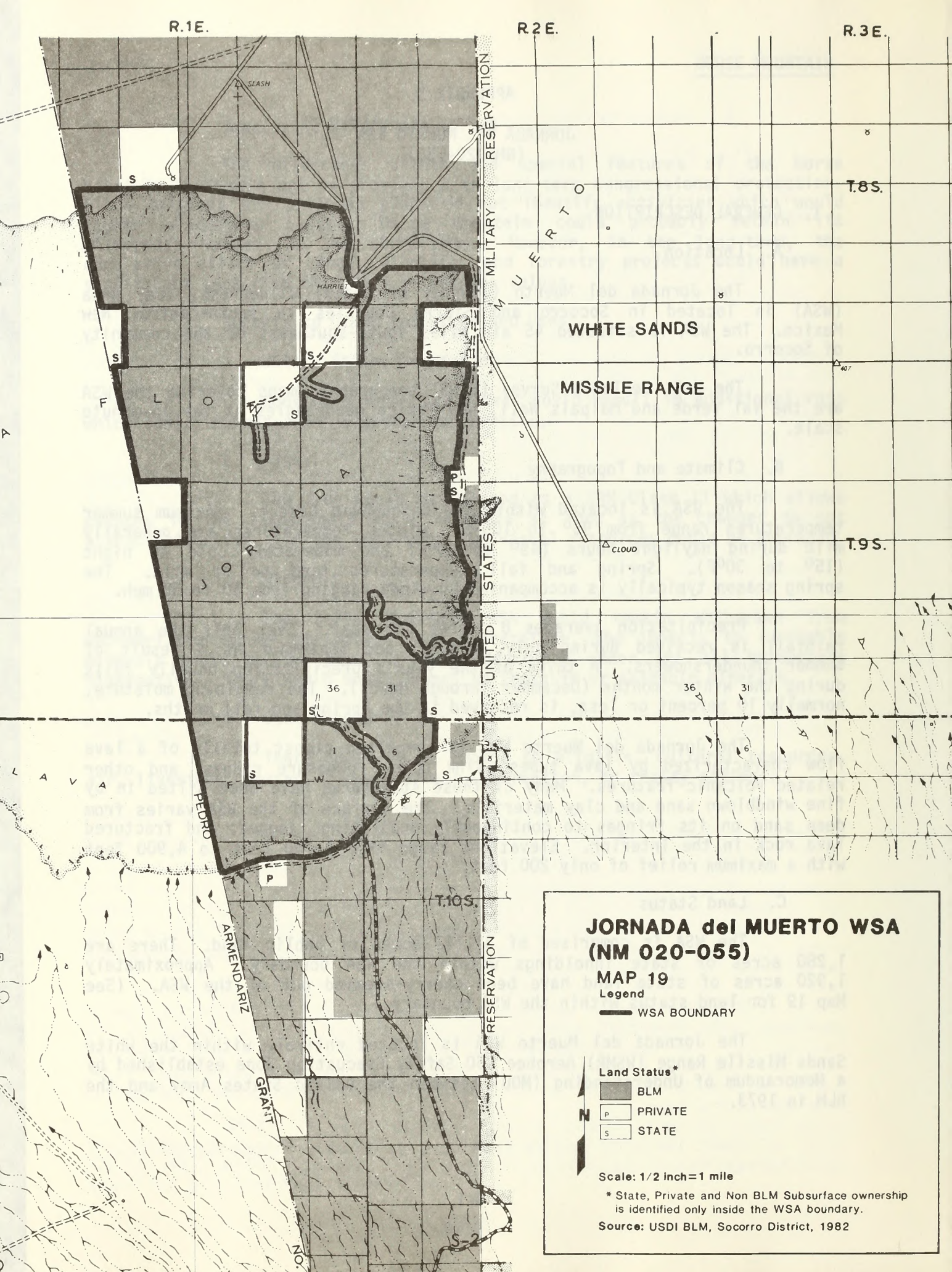
Precipitation averages 8 inches per year. Over half the annual rainfall is received during July, August, and September as a result of summer thundershowers. A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The Jornada del Muerto WSA is comprised almost totally of a lava flow characterized by lava tubes, sink holes, pressure ridges, and other related volcanic features. Many of these structures have been silted in by fine windblown sand and clay materials. The surface of the WSA varies from deep sand on its fringes to continuously undulating, jagged, and fractured lava rock in the interior. Elevations range from 4,700 feet to 4,900 feet with a maximum relief of only 200 feet.

C. Land Status

The WSA is comprised of 31,147 acres of public land. There are 1,280 acres of state inholdings within the WSA boundary. Approximately 1,920 acres of state land have been cherry-stemmed out of the WSA. (See Map 19 for land status within the WSA boundary.)

The Jornada del Muerto WSA is located entirely within the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone established by a Memorandum of Understanding (MOU) between the United States Army and the BLM in 1973.



JORNADA del MUERTO WSA (NM 020-055)

MAP 19

Legend

— WSA BOUNDARY

Land Status*

- BLM
- PRIVATE
- STATE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982

D. Access

Primary legal access to the WSA is provided by U.S. Highway 380 on the north, then south on County Roads 2268 and 2322.



Jornada del Muerto WSA.

II. EXISTING RESOURCES

A. Geology

The geology of the WSA is associated with the Jornada del Muerto syncline and the Tularosa Basin graben. Faulting and folding began in the Early Tertiary with major deformation occurring in the Middle Tertiary time. The WSA consists of the eastern half of the 0.76-million-year-old Jornada basalt flow. The flow is composed of permeable dark vesicular basalt less than 100 feet thick. The source of the flow, a crater 500 feet high and 1 mile in diameter, is located 1 mile west of the WSA, almost in the center of the lava flow. Geologic formations found in the WSA include Quaternary age basalt underlain by Quaternary age alluvium and the Upper Tertiary age Santa Fe formation. Windblown sand, silt, and alluvium partially mantle the surface of the lava flow.

B. Water

The Jornada del Muerto WSA is located within the Jornada del Muerto Basin, a broad aggraded basin having poorly defined drainage except at central areas of subsidence. There are no permanent streams or surface water bodies within the WSA.

The ground water available in the WSA is found in formations under the Jornada basalt flow. The basalt is underlain by Quaternary age alluvium and riverine gravels up to 100 feet thick, which can yield small to large quantities of water. The alluvium overlies clay, silt, sand, and gravel of the Upper Tertiary age Santa Fe formation which is known to yield small to moderate supplies of good quality water.

C. Soils

Approximately 95 percent of the surface area of the WSA is covered by a lava flow. Basalt rock outcrops cover 60 percent of the WSA. Soils within the interior of the flow are primarily composed of wind deposited sand and silt materials mixed with lava. Deep sandy soils with inclusions of deep loamy and shallow loamy soils over gypsum are found along the edge of the flow.

D. Vegetation

1. General

The vegetation of the WSA is typical of the Chihuahuan Desert. The area is comprised of the short grass vegetation type dominated by tobosa, black grama, and pappusgrass. Other common grass species include galleta, sand dropseed, fluffgrass, and various species of threeawns. Fourwing saltbush, creosote, Apacheplume, Mormon tea, soaptree yucca, broom snakeweed, cholla, prickly pear, and other cactus species are also commonly encountered.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA

does contain habitat which offers potential for the occurrence of one Federally-listed endangered plant species. Additional information on this potentially occurring plant is available on request from the Socorro Resource Area Office.

E. Wildlife

1. General

One Standard Habitat Site (SHS) has been identified within the WSA. The habitat site is based on the combination of dominant vegetation and landform. The SHS supports 93 wildlife species, which include 24 mammal species, 31 reptile and amphibian species, and 38 resident and migratory bird species. A complete list of wildlife species found within the WSA is on file in the Socorro Resource Area Office.

Big game species indigenous to the WSA are pronghorn and mule deer. Pronghorn are relatively abundant in the WSA while mule deer densities are extremely low.

The most common predator is the coyote. Gray fox and badgers also inhabit the WSA. Common small mammals include desert cottontails, black-tailed jackrabbits, white-throated woodrats, and kangaroo rats.

The most common raptor species is Swainson's hawk. Golden eagles, red-tailed hawks, and marsh hawks are also frequently sighted.

A phenomenon peculiar to lava flows is that many animals living on them exhibit melanism, or protective dark coloration. A variety of melanistic species of lizards and melanistic western diamond-backed rattlesnakes have been found in the WSA.

2. Threatened or Endangered Fauna Species

One Federally-listed endangered animal species, the American peregrine falcon, may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. In addition, little potential habitat exists for supporting migrating individuals because the WSA lacks a sufficient prey base and available water.

F. Visual

The WSA is an expansive desertland environment characterized by little topographic relief but considerable landscape diversity. The WSA is a grassland lying in a rugged, broken lava flow in the center of a large desert bolson surrounded by distant mountain ranges.

G. Cultural

One cultural site has been recorded within the WSA which consists of a small lava shelter, rock room outlines, basalt cairns, and associated artifacts. Additional sites are certain to be present within the WSA, but

predicting site density and significance is impossible without further inventory. A folsom projectile point, historic structures, and other artifacts have been located just outside the WSA. This suggests the cultural resources of the WSA could span 10,000 years of human occupation.

H. Air

Generally, the quality of the air within the Jornada del Muerto WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when prevailing winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of oil and gas within the Jornada del Muerto WSA, but the possibility exists that such reserves are present. The WSA is located in the northern half of the Jornada del Muerto Exploration Area which has a Class III favorability rating in a system where Class I is most favorable and Class IV least favorable. Anticlines present on the northern end of the exploration area have been tested with negative results (Foster and Grant 1974).

Six post-Federal Land Policy and Management Act (FLPMA) oil and gas leases have been issued on parcels located within the WSA. No exploration or development for oil and gas has occurred in the WSA.

The potential for undiscovered geothermal resources is difficult to predict due to conflicting evidence. Volcanic activity of the type associated with the Jornada Lava Flow does not usually produce commercially exploitable geothermal systems. Such lavas erupt from deep seated magma bodies along small, localized fissures and cool rapidly. However, the warm water pumped from Crater Well, which is located 2 miles outside the WSA boundary, indicates abnormal heat flow in the area. For these reasons, the geothermal potential of the WSA cannot be adequately assessed given existing data.

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The northern half of the WSA is within the Socorro Peak Geothermal Leasing Area.

2. Non-Energy Minerals

Gypsum bearing clays occur at the margins of the lava flow, but are very impure and unlikely to represent a useful source. Basalts of the type which comprise the Jornada Lava Flow rarely have appreciable deposits of minerals. The potential for the development of locatable minerals in the WSA is considered nonexistent. There are no existing mining claims or known deposits of locatable minerals within the WSA.

No material sales have been conducted within the WSA, and no future sales are anticipated. Lack of demand is undoubtedly due to the extremely isolated location of the lava flow and the existence of similar materials in more accessible areas. If local demand were to develop, the basalt could be used for rip-rap, crushed stone, and ornamental rock; but this is unlikely.

B. Watershed

The Jornada del Muerto WSA is located entirely within the Slash watershed. The WSA is in the slight erosion class and has a projected static erosion trend. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

Two grazing allotments lie partially within the Jornada del Muerto WSA. Both allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Approximate Acres in WSA	Percent Allotment
Buckhorn Ranch	40,848	5,485	14,956	37%
Malpais	37,368	5,427	16,191	43%
TOTAL			31,147	

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs) on public land.

2. Ranch Management

Permittees periodically inspect and maintain the developments through the use of motorized vehicles. Fences are inspected about once a month on horseback or by vehicle.

Existing rangeland developments within the WSA boundary consist of 4 1/2 miles of allotment boundary fence and 3 1/2 miles of interior pasture fence. Approximately 2 1/2 miles of buried plastic pipeline and 3 drinking troughs on the Malpais allotment are on public land, and cherry-stemmed out of the WSA is one windmill on the Lava Ranch allotment. Cherry-stemmed rangeland developments on state inholdings include: 1 windmill on the Buckhorn Ranch and 1 windmill, an earthen stock tank, and approximately 2 miles of buried plastic pipeline with 2 drinking troughs on the Malpais allotment.

Boundary Fences Within WSA:

Buckhorn Ranch and Malpais	2 miles
Lava Ranch and Malpais	2 1/2 miles

Boundary and Interior Pasture Fences Forming WSA Boundary:

Buckhorn Ranch	10 miles
Malpais	15 miles

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

Recreational use of the WSA is very low and limited to coyote calling, pronghorn hunting, and occasional sightseeing.

The expansive vistas of surrounding landscapes and the opportunities for solitude make the WSA potentially attractive for day uses such as short hikes, picnicking, and photography. Despite these potential uses, recreational opportunities within the WSA itself are considered by the BLM to be limited for most recreational users when compared to other lands in the region.

Public comments on the draft version of this report indicated disagreement with this assessment and revealed that there are individuals who find this rugged, expansive landscape challenging and attractive for recreational activities such as hiking, camping, and photography.

Despite this attractiveness for some people, recreational use is not expected to increase substantially in the future because of the lack of recreational water sources and the presence of lands with more diverse recreational opportunities closer to population centers in the region.

E. Education/Research

Environmental education opportunities may be significant for the study of the natural history of desert-lava grassland.

F. Wildlife

No specific wildlife management actions are planned for the area at present.

G. Other--Military

The WSA lies within the White Sands Missile Range Aerobee 350 Safety Evacuation Zone and may be subject to occasional impacts from missile hardware or debris. The military periodically evacuates residents of the Zone to ensure their safety.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the heart of the WSA are minimal. Intrusions within the WSA boundary consist of 8 miles of grazing allotment boundary and interior pasture fences. Three windmills, an earthen stock tank, four and one-half miles of buried water pipeline, and five drinking troughs are located on state and Federal lands that have been cherry-stemmed out of the WSA.

Overall, the naturalness values of the interior of the WSA are of high quality.

The boundaries of the WSA are impacted by 25 miles of fences and 2 1/2 miles of buried pipeline with 3 drinking troughs. These developments are technically outside the WSA boundary. The concentration of rangeland developments along the WSA's periphery only slightly detracts from the generally high quality of the area's naturalness values.

b. Solitude

The Jornada del Muerto WSA offers outstanding opportunities for solitude. The WSA lies in one of the most remote, little visited regions of New Mexico. It is a vast, rugged lava landscape surrounded by grassland desert and distant mountain ranges.

c. Primitive and Unconfined Recreation

For those persons who appreciate expansive and isolated desert environments, the recreational values of this WSA would be considered high. However, for the average individual, the WSA would likely prove unattractive for backcountry use. The WSA is well suited to late fall and winter recreational use.

2. Special Features

A variety of lizards and western diamond-backed rattlesnakes found in the Jornada del Muerto WSA exhibit melanism or dark protective coloration; a phenomenon peculiar to lava flows.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Jornada del Muerto WSA as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe. However, the WSA's Chihuahuan Desert associations are strongly influenced by the unique edaphic, hydrological, and structural characteristics of the lava flow. For example, soap-tree yucca occur on the periphery of the WSA which approach 30 feet in height.

b. Distance From Population Centers

Two cities, Albuquerque and Las Cruces, New Mexico, identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs), are located within 3 hours driving time of the WSA. El Paso, Texas, is within 4 hours driving time of the WSA.

B. Manageability

The Jornada del Muerto WSA could be managed as wilderness. This judgment was made after considering such factors as valid existing rights, oil and gas leases, the White Sands Missile Range (WSMR) Aerobee 350 Safety Evacuation Zone, off-road vehicle use, and state inholdings.

Valid existing rights in the WSA consist of livestock operations. Livestock management, including required access for maintenance of existing rangeland developments, is not expected to create problems for wilderness management. With the exception of fences that do not have existing vehicular access, all rangeland developments within the WSA are located along cherry-stemmed roads.

Six post-FLPMA oil and gas leases have been issued within the WSA and are subject to the wilderness protection stipulation.

The WSA lies within the WSMR Aerobee 350 Safety Evacuation Zone that must be evacuated for the safety of area residents. The availability of the Safety Zone is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Zone to recover missile debris. However, these access needs are not expected to create serious wilderness management problems because only one missile impact is known to have occurred in the WSA in the past 24 years. The recovery of that debris did not significantly alter the natural values of the WSA. The military's need to periodically evacuate the area for safety reasons will complicate wilderness management but will not render the area unmanageable as wilderness.

To assist the military in their periodic evacuations of the area, a permit system could be a desirable feature of the wilderness management plan which will be developed if Congress designates the area. This could allow BLM to control use of the area to a greater degree than it has in the past and reduce conflicts with the military's need to ensure safety in the area.

The wilderness management potential of the WSA in terms of effectively precluding vehicular access to the area is excellent. Off-road vehicle use is limited by the rugged nature of the volcanic landscape. Although several jeep trails extend into the area, access to them could be effectively closed to use by the general public.

Acquisition of 1,280 acres of state inholdings and 1,920 acres of cherry-stemmed state land through voluntary exchange would enhance manageability.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has generally indicated support for designation of the Jornada del Muerto WSA as a wilderness area. Reasons cited have emphasized the WSA's outstanding solitude, natural, and recreation values.

Opposition has been expressed by area permittees who feel that wilderness designation would adversely impact their ranch operations.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Jornada del Muerto WSA as wilderness could potentially conflict with military operations within the Aerobee 350 Safety Evacuation Zone.

Twenty-seven people commented on the draft version of this report; five were opposed to wilderness designation while twenty-two favored wilderness designation for the Jornada del Muerto WSA.

These comments revealed substantial disagreement with the BLM's initial assessment of the WSA. The disagreements centered primarily around BLM's assessment of the manageability problems resulting from WSMR's needs and activities in the Aerobee 350 Safety Evacuation Zone. There were also differences of opinion regarding the attractiveness and recreational opportunities offered by the WSA.

Concern was expressed by WSMR and others that wilderness designation would increase the low levels of visitor use which presently occur in the area, thereby increasing safety and security problems in the Aerobee 350 Evacuation Zone.

These comments have been evaluated and incorporated into the appropriate sections of this final report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under the All Wilderness Alternative, the entire 31,147 acres of public land within the Jornada del Muerto WSA would be recommended as suitable for wilderness designation. (See Map 19 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, there would be significant impacts to wilderness values because of the added protection of Congressional designation. Impacts to air, education/research, and realty actions would be clearly insignificant; they were not included in the following discussions.

1. Impacts to Minerals

A U.S. Geological Survey and U.S. Bureau of Mines minerals survey would be conducted to supplement current data regarding the mineral-energy potential for the area.

There is currently no mineral production in the WSA. However, the WSA has a Class III favorability for oil and gas. The post-Federal Land Policy and Management Act oil and gas lease holders could be impacted in the short-term (the life of the lease) since any exploration or development work that could impair wilderness values would not be allowed.

After wilderness designation, the existing leases, if unexplored, would not be reissued. No new leases would be issued. Future options to explore for or develop mineral resources would be forgone.

Wilderness designation would have little or no impact on geothermal resource development, locatable mineral development, or the use of saleable materials.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Wilderness designation of the area would maintain the existing water, soils, and vegetation values by precluding surface disturbance and preserving the natural ground cover of the WSA.

b. Wildlife

The designation of the entire WSA would permanently preserve 31,147 acres of desert-lava grassland wildlife habitat. The natural distribution and abundance of wildlife species would be maintained.

The impact of wilderness designation on wildlife management activities in the WSA is anticipated to be low.

The elimination of vehicular access by the general public would reduce the potential for harassment and poaching of wildlife (primarily pronghorn).

c. Visual

The scenic values of the WSA would be permanently preserved by wilderness designation. Minor modifications in the basic elements of the landscape as a result of natural ecological changes and limited management activity would be permitted.

d. Cultural

Closing the WSA to vehicular entry would reduce the potential for the occurrence of vandalism of cultural resources within the area.

e. Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. For example, the installation of new rangeland developments would be restricted by wilderness designation to those improvements which primarily benefit the natural rangeland values of the wilderness resource. This would impose limitations on vehicular access, and may increase the costs in constructing or maintaining new rangeland developments.

It is difficult to assess how the above limitations would affect livestock grazing in the WSA because the type and location of future rangeland developments have not been identified at this time. However, given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are necessary to ranch operations.

It would be desirable to restrict use by the general public on three roads which are presently corridorred out of the WSA. One road could be restricted to authorized users in both of the allotments. Other vehicle routes necessary to maintain existing rangeland developments could remain open to use by area permittees.

f. Recreation

Recreational activities which require motorized access would be precluded from the WSA. Hunters would be most affected, but these impacts would not be great because the lava is a natural barrier to vehicle use and the few routes which exist are seldom used.

Recreational use of the area would not increase substantially over existing levels within the foreseeable future. Visitors could be regulated by a permit system designed to aid the military's efforts at evacuating the area during test periods.

g. Wilderness Values

Wilderness designation would have significant impact on wilderness values by providing the resources in the area with long-term Congressional protection. The area would retain its natural appearance and be managed to protect its wilderness values.

h. Other--Military

Wilderness management would not significantly affect the mission of White Sands Missile Range (WSMR). It would, however, require coordination between WSMR and the BLM to ensure that possible missile recovery efforts are conducted in a manner that does not unnecessarily degrade wilderness values.

The use of a permit system by the BLM to control wilderness access could result in a greater degree of visitor safety than presently exists with uncontrolled access.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 31,147 acres of public land within the Jornada del Muerto WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be development of rangeland resources, possible mineral exploration, and other traditional uses.

Given the rugged nature of the lava flow and the low levels of predicted activities in the area, significant impacts to current uses or wilderness values would not occur. Under the No Action/No Wilderness Alternative, the impacts to air, education/research, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Jornada del Muerto WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

No significant impacts to water, soils, or vegetation would occur under this alternative.

b. Wildlife

Under this alternative, a wider range of wildlife management actions, such as installing wildlife water catchments, would be allowed. If mineral exploration occurs and new roads are constructed, wildlife values could be impacted.

c. Visual

Scenic values would not be permanently protected. Since no uses which would impact the scenic values of the WSA are predicted at this time, this is a minor impact.

d. Cultural

Continued vehicular access to the WSA, or an increase in the availability of such access, could result in increased cultural resource vandalism. This is a minor impact.

e. Other Resources

There would be no impacts to minerals, livestock grazing, recreation, and the WSMR Aerobee 350 Safety Evacuation Zone.

APPENDIX T

MESITA BLANCA WSA (NM-020-018)

I. GENERAL DESCRIPTION

A. Location

The Mesita Blanca Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 4 miles north of U.S. Highway 60 and 20 air miles west of Quemado.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Blaines Lake, Goat Springs, Salazar Canyon, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles are at the 7 1/2-minute scale.

B. Climate and Topography

The WSA has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September primarily from brief, but often heavy, thundershowers. Winter is usually the driest season. Annual precipitation averages about 11 inches over the entire WSA.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Mesita Blanca WSA is a flat to rolling grassland broken by isolated sandstone and basalt mesas which are characterized by vertical cliffs and broken topography. The dominant topographic feature and highest point in the WSA is the Red Hill Cinder Cone and its associated 2,000-acre lava flow. Elevations in the WSA range from 6,400 feet to 7,679 feet, resulting in an elevation difference of 1,279 feet.

C. Land Status

The WSA contains 16,429 acres of public land and 160 acres of private inholdings. (See Map 20 for land status within the WSA boundary.)

D. Access

The Mesita Blanca WSA has good physical and legal access. County Road A007 forms a portion of the eastern boundary of the WSA with County Road A005 providing access to the western edge of the WSA. There are also unimproved ranch access routes which provide east-west access through the southern and northern portions of the WSA.

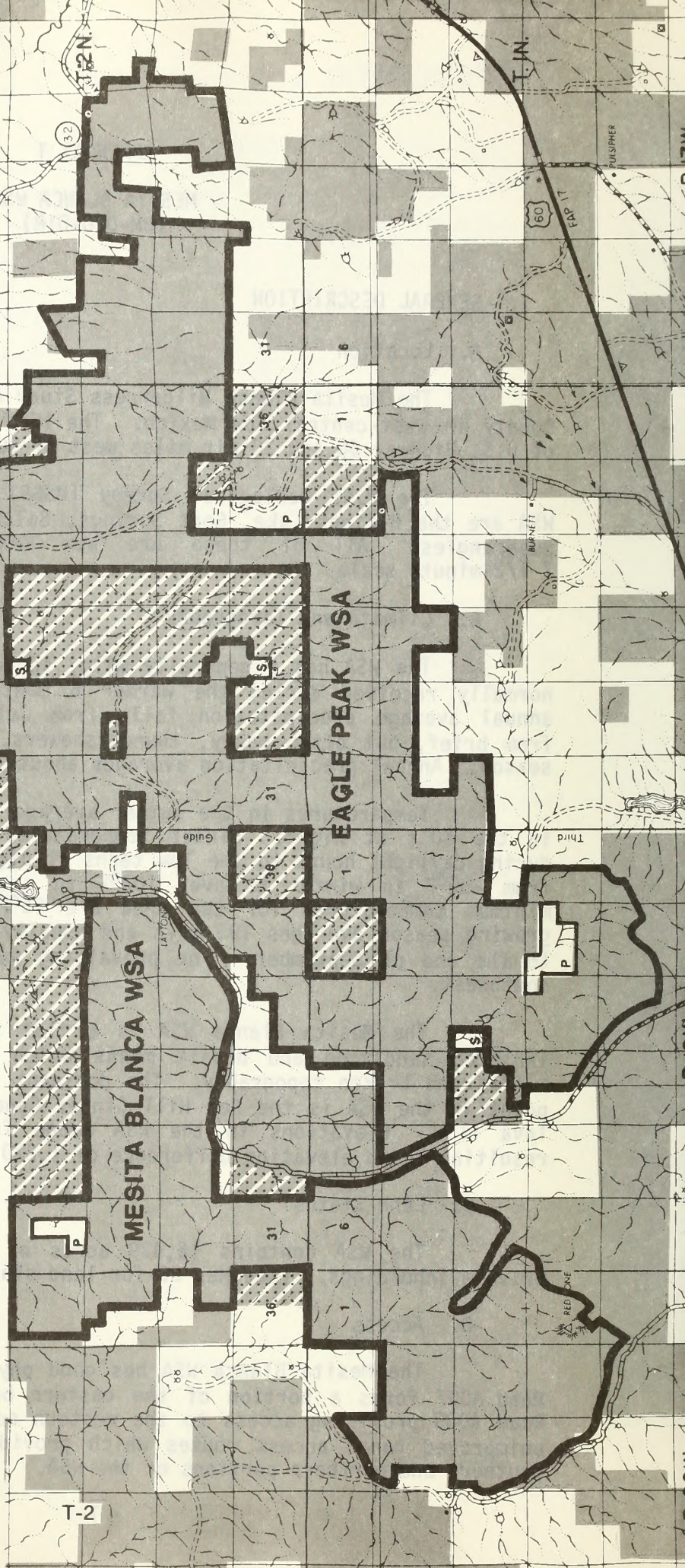
MESITA BLANCA WSA **(NM 020-018) MAP 20** **EAGLE PEAK WSA** **(NM 020-019) MAP 17**

- Legend**
- WSA BOUNDARY
 - AMENDED BOUNDARY
 - LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY
 - Land Status***
 - BLM
 - PRIVATE
 - STATE
 - BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The Mesita Blanca WSA lies within the southern portion of the Colorado Plateau. Gently southeastward dipping sediments of Cretaceous age, primarily the Mesaverde group and Mancos shale, dominate the surficial geology of the WSA. Natural erosion of the sediments has produced mesas of low relief throughout the area. Flows of Quaternary basalts and a few related cinder cones (the most prominent being the Red Hill Cinder Cone) cap portions of the southern extension of the WSA.

Exploration wells drilled within the region provide evidence that Precambrian granite, Permian sediments, and Triassic sediments are present beneath the surficial deposits.

In general, sedimentary rocks, which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then, in part, covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

The Mesita Blanca WSA is located in the Little Colorado River sub-basin. The principal stream system is Carrizo Creek, but neither it nor other minor drainages found in the Mesita Blanca WSA are perennial. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the main streams. Earthen type reservoirs, designed to catch and store runoff, normally contain water 6 months of the year. Quality data for the Little Colorado sub-basin are not available.

The source of all ground water in the Little Colorado sub-basin is precipitation. No ground water is known to enter the basin from outside areas. Most rock formations present will yield enough ground water locally to supply livestock needs. The alluvium of stream valleys and bolson fill are the most important ground water reservoirs in the WSA. There is a large volume of ground water available for development in the Little Colorado sub-basin, but is so distributed as to make recovery in large amounts uneconomical. In general, ground water from stream-valley alluvium and bolson deposits is of good quality and suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Ground water from intrusive and volcanic rocks is generally of good quality, but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, ground water is usually highly mineralized.

C. Soils

The soils in this WSA range from shallow to deep and were formed in a variety of parent materials. About one-third of the area has soils that formed over sandstone and shale. These soils are gently sloping, but have potential water erosion hazards due to the silty textures.



View from Red Hill Cinder Cone.

Another one-third of the WSA is characterized by soils that are shallow to deep over basalt flows, basalt-capped mesas, and rolling basalt hills and ridges. About 30 percent of this area is basalt rock outcrop. These soils are clayey and have many rock fragments. The potential erosion hazard is generally low in this area, especially with the protective rock fragments on the surface. The only erosion problems would occur on the steep side slopes.

The rest of the WSA has deep gravelly soils on moderately sloping hills and fans, deep loamy soils in swales, and a small area of soils formed in waterlaid volcanic ash southwest of the Zuni Salt Lake crater. The water erosion hazard in these areas is slight to moderate.

D. Vegetation

1. General

In the Mesita Blanca WSA, the following Standard Habitat Sites (SHS's) are present:

Blue Grama-Snakeweed Hill (1,326 acres)

Found on rolling hills bordered by pinyon-juniper woodlands, this SHS includes blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Also present are fringed sage, winterfat, galleta, dropseed,

wolftail, oak, Apacheplume, and scattered pinyon and juniper. The aspect is usually short and mid-grasses with scattered low shrubs. Animal species that are commonly found in this SHS include porcupines, striped skunks, mule deer, bobcats, coyotes, pronghorn, turkey vultures, and golden eagles.

Alkali Sacaton-Russian Thistle Valley (9,316 acres)

This SHS is found in large, flat bottomlands bordered by pinyon-juniper hills, with annual forbs and grasses also present. Principal plant species include alkali sacaton, western wheatgrass, vine-mesquite, blue grama, galleta, spike muhly, bottlebrush squirreltail, fourwing saltbush, rabbitbrush, winterfat, and annual and perennial forbs. The aspect is usually grassland with scattered shrubs. Animals commonly found in this SHS include pronghorn, kit foxes, coyotes, striped skunks, and turkey vultures.

Pinyon-Juniper Hill (5,787 acres)

This SHS is found primarily on low hills next to mountains. Principal plant species include pinyon-juniper, snakeweed, blue grama, fringed sage, winterfat, bottlebrush squirreltail, mountain mahogany, oak, rubber rabbitbrush, sideoats grama, New Mexico feathergrass, needle-and-thread, galleta, little bluestem, skunkbush sumac, and spineless horsebrush. North- and east-facing slopes usually have more pinyon, juniper, and shrubs, while south- and west-facing slopes contain more grasses and low-growing shrubs. Common animal species include coyotes, kit foxes, porcupines, striped skunks, mule deer, bobcats, turkey vultures, red-tailed hawks, and screech owls.

2. Threatened or Endangered Plant Species

No threatened or endangered plant species have been recorded from this WSA. The WSA does contain habitat which offers potential for the occurrence of eight threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Mesita Blanca WSA supports approximately 306 wildlife species. These include 57 reptile and amphibian species, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species occurring in the Mesita Blanca WSA is available for review at the Socorro Resource Area Office. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Fauna Species

The WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for the black-footed ferret, a Federal endangered species.

F. Visual

The scenic quality of the majority of the WSA has been rated as Visual Resource Management (VRM) Class III with some areas of Class IV scenery. The higher Class III visual values are derived from the scenic qualities of the Red Hill Cinder Cone and the vertical sandstone and basalt mesas found in the southern and central parts of the WSA. The rolling, grass-covered hills in the northern portion of the WSA were assigned Class IV because of their low scenic quality and lack of visual sensitivity.

G. Cultural

Portions of the Mesita Blanca WSA were the subject of a Class II Cultural Resource Survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 5,000 acres in the WSA, identified 53 sites which ranged from petroglyphs to rock shelters and villages. These sites represent human habitation from Archaic period to the homesteading era. Of the sites recorded by this survey, seven were considered worthy of nomination to the National Register of Historic Places.

H. Air

Generally, the quality of air within the Mesita Blanca WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

This situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Although the U.S. Geological Survey (USGS) classifies the area as being prospectively valuable for oil and gas, available information suggests a low favorability.

One Federal noncompetitive oil and gas lease is present within the southwestern portion of the WSA. This lease contains approximately 2,500 acres. Three other leases have been applied for within the central portion of the WSA. These applications cover approximately 10,000 acres. It is probable that most of the Federal mineral estate in this area could be leased noncompetitively. Although no drilling has occurred within the WSA, three dry wells have been drilled locally since 1950. Any positive shows of oil and gas in the region could stimulate exploration attempts within the WSA.

b. Coal

Private and government exploration in areas 15 to 20 miles northeast of the WSA have identified economic coal reserves within the Mesaverde group. Although the Mesaverde group occurs shallowly in much of the WSA, recent information indicates that the potential for economic coal deposits is low because if present, the coal would occur in thin beds and/or at depth.

c. Geothermal

Moderate geothermal anomalies exist, but represent a very low potential for any exploration or development of geothermal resources.

d. Salt

A New Mexico State salt lease has been active at the Zuni Salt Lake for approximately 40 years. The Zuni Salt Lake is adjacent to the northwestern extension of the WSA. Despite the lease's longevity, only minor production has occurred at the property. Although low, there is a possibility that exploration for the salt's source could occur within the WSA.

2. Locatable

Within the region, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration adjacent to the WSA has identified subeconomic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate favorability for economic uranium deposits.

Currently, there is no exploration or development of locatable minerals within the WSA.

3. Saleable

No sales of common variety minerals have been recorded within the WSA. A New Mexico State Highway Department cinder pit has previously been active at the southeastern base of Red Hill Cinder Cone, which lies just outside of the WSA. The prominent Red Hill Cinder Cone, which is within the boundary of the WSA, is composed of excellent cinders and has good access. This deposit would be an excellent source of cinders.

B. Watershed

The Mesita Blanca WSA is located within the Blaines Lake and Nations watersheds. Two small areas were identified from the Phase I watershed survey that are in the critical erosion condition class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. Watershed plans will be developed on the Stokes Flat and Headquarters allotments within the WSA and watershed work will be done to improve the critical erosion areas to moderate. Runoff in the WSA averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are within the Mesita Blanca WSA. All three allotments are run as year-round cow-calf operations. The specific dates of grazing the WSA in relation to the total allotment depends on the availability of forage and the permittee's rangeland management and livestock management practices. The Rancho Allegre Cattle Company has an ongoing Allotment Management Plan (AMP) developed in cooperation with the BLM.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Rancho Allegre	79,578	11,880	11,219	14%
Stokes Flat	10,690	2,400	4,570	43%
Headquarters	17,969	2,340	640	4%
TOTAL			16,429	

2. Ranch Management

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage conditions, availability of livestock water,

supplementary salt, minerals, or protein, breaking ice on livestock waters, and performing normal maintenance on fences, dirt tanks, and pipelines.

Most of the daily ranch operations are performed using vehicles. Normal maintenance of the rangeland developments would utilize motorized vehicles such as a pickup truck or a bulldozer to clean dirt tanks. A pickup truck would be used to carry needed supplies for maintenance repairs, to transport supplemental feed, and to provide transportation for the permittee when checking on general rangeland and livestock conditions.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Headquarters	3 miles of fence
Stokes Flat	8 miles of fence
Rancho Allegre	5 miles of fence 6 miles of pipeline 4 drinking troughs 5 dirt tanks

Note: ^{a/}Information shown in tables reflects only Federal Acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No specific rangeland developments have been planned for the WSA at this time.

D. Timber Harvest

The Mesita Blanca WSA is generally of an open character with scattered pinyon-juniper woodlands occurring on the ridges, mesa sides, and hilly areas. Most of these woodlands are of small size and volume, occurring in open stands on the steeper terrain of the area. There are approximately 4,000 cords of standing wood available in the WSA for such things as firewood and fence posts.

These pinyon-juniper stands offer only limited potential as sources of firewood and fence posts because of their low volumes. This limited potential is reduced further by the location of most of the stands which are not easily accessible by vehicle.

E. Recreation

Existing recreational use in the WSA is low with most current use and potential for future use occurring at the 500-foot high Red Hill Cinder Cone and lava flow.

The WSA offers opportunities for rockhounding and geologic sightseeing. Some deer hunting also occurs, but low game populations (estimated .3 deer per section) limit hunter success. Light levels of off-road vehicle (ORV) use are also associated with these activities in the area.

F. Education/Research

The archaeological resources in the WSA have been the subject of research in the past and offer outstanding opportunities for future research uses.

Opportunities for environmental education in the WSA are derived from geologic features and cultural resources. However, the distance from population centers reduces the likelihood that this area will be used for environmental education by institutions.

G. Native American

There are no known Native American religious or cultural uses in the WSA. The Mesita Blanca WSA is located approximately 5 miles southwest of Zuni Salt Lake, an important Native American religious and cultural site. However, it is not known at this time if religious uses centered at Zuni Salt Lake also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land withdrawn within the WSA.

I. Wildlife

No wildlife management actions are planned within the WSA at this time.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of the Mesita Blanca WSA is impacted primarily by rangeland developments and watershed control structures. These impacts are not typically screened by topography or vegetation and many are visible over a wide area in the WSA.

The Mesita Blanca WSA contains 9 livestock watering structures (dirt tanks and drinking troughs), 6 miles of buried pipeline, and 16 miles of fences. Access to these rangeland developments is provided by approximately 20 miles of vehicle routes.

The human impacts in the Mesita Blanca WSA result from ranch operations. Some of the access routes would be closed and would return to a natural condition as a result of wilderness management. Other routes would continue to be used occasionally by the permittee to perform necessary maintenance of rangeland developments. These routes would continue to be visible, but would become less of an impact due to reduced use under wilderness management.

The cumulative effects of the rangeland developments and the general lack of topographic and vegetative screening are considered to reduce the level of perceived naturalness in the Mesita Blanca WSA.

b. Solitude

The size and configuration of the WSA would allow users to find secluded spots. Because of the open character of much of the WSA, opportunities for solitude would be highest in areas with some degree of topographic and vegetative screening. Those areas would be found primarily in portions of the lava flow from the Red Hill Cinder Cone and along the bases of the isolated mesas which occur in the WSA. The mesa tops and the Cinder Cone itself, because of greater visibility, would offer less chance of avoiding the evidence of human activities both inside and outside the WSA.

Outside sights and sounds may affect the feeling of solitude in portions of the Mesita Blanca WSA. The WSA is bordered on two sides by county roads. A 345kv transmission line is located west of the WSA and is visible from higher points in the WSA as is a smaller transmission line, which is cherry-stemmed about 1/2-mile into the east side of the WSA. Large erosion control dams and an abandoned gravel pit along the eastern boundary also reduce the feeling of being alone.

c. Primitive and Unconfined Recreation

During the wilderness inventory, the Mesita Blanca WSA was not found to possess outstanding opportunities for primitive recreation. Opportunities for primitive or unconfined recreation were not considered

outstanding in the WSA because the terrain in the WSA is common to the region and it lacks the visual interest of lands to the north and east. The opportunities for recreation that do exist in the WSA consist primarily of geologic sightseeing, hiking around the Red Hill Cinder Cone and lava flow, rockhounding, and some deer hunting. There is little known recreation use in the WSA other than around the Red Hill Cinder Cone.

2. Special Features

Geological features and archaeological resources in the WSA are considered significant.

The WSA contains a high density of archaeological sites representing human habitation from archaic to historic times. Seven recorded sites in the WSA are considered eligible for nomination to the National Register of Historic Places.

The 500-foot high Red Hill Cinder Cone is a dominant feature in the landscape of the region. It represents a classic volcanic cinder cone and lava flow. The lava flow covers approximately 2,000 acres and contains numerous interesting lava features.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would the administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Mesita Blanca WSA as being within the Colorado Plateau Province with a potential natural vegetation of 5,787 acres of pinyon-juniper woodland and 10,642 acres of grama-galleta steppe.

b. Distance From Population Centers

The WSA is within 5 hours driving time from Albuquerque and 5 1/2 hours driving time from Las Cruces, New Mexico.

B. Manageability

Several factors potentially affect the capability of the Mesita Blanca WSA to be managed as wilderness: boundary configuration, inholdings, and maintenance of rangeland developments.

An awkward boundary configuration and a lack of readily identifiable terrain features to delineate the boundary or to provide

natural barriers to off-road vehicle travel would require fencing or a system of signs and cairns to delineate the boundaries of the wilderness area in order to reduce trespass problems.

Private surface inholdings in the Mesita Blanca WSA would not pose serious problems for wilderness management. There is a 160-acre private inholding which could require reasonable access. This access may not significantly affect wilderness values nor pose serious problems for wilderness management.

The maintenance of grandfathered rangeland developments and necessary vehicular access for ranch operations are not expected to create serious manageability problems themselves, but would result in the continued existence of human impacts in the WSA.

Areas 10 to 15 miles northeast of the WSA are being leased for coal development. If regional coal development occurs, it could complicate wilderness management of this area by increasing traffic along County Road A007 on the eastern boundary of the WSA. This would increase the impact of outside sights and sounds in the WSA and increase the likelihood of trespass problems inside the designated area.

The Mesita Blanca WSA could be managed to preserve its existing wilderness values.

V. PUBLIC INVOLVEMENT OVERVIEW

This section was prepared after considering public input obtained from a variety of sources including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the BLM New Mexico Statewide Wilderness Environmental Impact Statement (EIS).

Opposition to wilderness status for the Mesita Blanca WSA has centered around conflicts with mineral and livestock interests. A large number of Catron County residents have also expressed opposition to additional wilderness areas in Catron County. Reasons for opposition included the following: the lack of naturalness of the area due to rangeland developments; lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on future rangeland developments and livestock operations; and impacts of wilderness designation on future economic development of Catron County.

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited include: underrepresentation of landforms and grasslands in the WSA in the National Wilderness Preservation System; need to preserve raptor habitat; and existence of high cultural resource values. The lack of conflict between wilderness management and livestock operations and the lack of timber resources in the WSA were also noted.

Nineteen letters and fifty-two coupons were received during the public comment period on the Draft Environmental Assessment (DEA).

Fifteen letters and the coupons expressed disagreement with the Area Manager's nonsuitable recommendation. Among the reasons cited in support of designation were: the need to include more grassland and mesa environments in the National Wilderness Preservation System; the benefits of wilderness to wildlife; the presence of important archaeological resources; and the high geologic value of the Red Hill Cinder Cone.

The benefits of wilderness to wildlife, the significant cultural resources, and the value of the Red Hill Cinder Cone were noted in the draft version of this report and were considered by the Area Manager in his initial recommendation. The representation of landforms and ecosystems in the National Wilderness Preservation System will be addressed regionally and Nationally in the upcoming BLM New Mexico Statewide Wilderness EIS. This analysis will then be used by the State Director in arriving at his recommendations for New Mexico WSAs.

Four letters expressed agreement with the nonsuitable recommendation. The WSA was felt to be nonsuitable due in large part to the degree of human impacts and probable future impacts from mineral activities. It was also felt that the area lacked outstanding opportunities for solitude and primitive recreation.

These comments provided no new information and did not result in any revisions to the draft version of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 16,429 acres of public land within the Mesita Blanca WSA would be recommended suitable for wilderness designation. (See Map 20 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

The impacts to wilderness values would be significant in the long-term. Impacts to air, education/research, Native American uses, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the area is recommended suitable for wilderness designation, additional mineral surveys would be conducted by the U.S. Geological Survey and U.S. Bureau of Mines to augment current information. These additional mineral surveys would be considered before a final decision on wilderness designation is made by Congress.

a. Leasable

Under existing laws, wilderness designation would preclude the issuance of new mineral leases.

The WSA has low favorability for coal or the discovery of oil and gas or geothermal resources. Because of the low favorability for economic occurrences of coal, oil and gas, or geothermal resources, wilderness designation would result in insignificant impacts to these resources.

b. Locatable

After wilderness designation, development work, extraction, and patenting would be allowed to continue only on valid claims. No new prospecting and exploration under the mining laws would be allowed.

Presently, there are no known mining claims in the Mesita Blanca WSA. If any claims are filed in the WSA and if a valid discovery is made prior to wilderness designation, it could be developed. If no discovery is made, wilderness designation would preclude further development of the claims.

In the Mesita Blanca WSA, it is likely that any claims filed would be for uranium. Although the area is favorable for uranium mineralization, present information would suggest little impact to the local uranium industry since large areas with similar or better potential are open to exploration and development.

c. Saleable Materials

No permits to remove materials such as sand and gravel or cinders would be issued in designated wilderness areas. This would not affect local supplies since many alternate sources are found outside the WSA.

2. Impacts to Other Resources and Uses

a. Water, Soil, Vegetation

Management actions to reduce erosion in a critical watershed management area would be impacted by wilderness designation. Structural and treatment measures, including the construction of detention dams, pinyon-juniper removal, and watershed tillage would be restricted under wilderness management.

In the long-term, wilderness management would protect water, soil, and vegetation values by reducing surface disturbance and preserving the natural ground cover in the WSA. These impacts could be substantial if regional coal development occurs. Under these circumstances, it is expected that wilderness management would preclude increased off-road vehicle use in the area. This would reduce problems resulting from ruts and vehicle scars and subsequent erosion.

b. Wildlife

There would be few short-term impacts of wilderness designation on wildlife in the Mesita Blanca WSA. The impacts, derived from the elimination of vehicular access, would include reduced potential for harassment and poaching of wildlife and a reduction in hunting pressure.

In the long-term, wilderness management would serve to protect the natural values, including the natural distribution and abundance of wildlife species, which presently exist in the area. These long-term impacts would increase substantially if the region is found to be suitable for coal production. This would accelerate the human impacts in the area and increase the value of undisturbed areas for wildlife habitat.

The impacts of wilderness designation on threatened and endangered animal species were analyzed in a biological assessment covering black-footed ferrets. Under this alternative, the black-footed ferret would not be impacted.

c. Visual

Existing visual resources would be protected since the area would be managed under the more restrictive Visual Resource Management Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted under a Class I designation.

d. Cultural

The elimination of motorized access would reduce the chance of pothunting. While archaeological resources are protected by law,

wilderness designation could aid long-term efforts to protect specific sites and would enhance scientific and educational values, by preserving the natural setting of the archaeological resources present in the WSA.

e. Livestock Grazing

The WSA presently supports 2,268 animal unit months (AUMs); these existing levels of livestock use and the maintenance of grandfathered rangeland developments would continue under wilderness management. Although grazing is a permissible and compatible activity in wilderness, limitations on vehicular access would be necessary to protect wilderness characteristics.

It is anticipated that few additional rangeland developments would be needed to improve grazing management in the WSA. For this reason, it is felt that wilderness designation would not have significant impacts on livestock grazing in the WSA.

It should also be noted that in many cases wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from limitations on design and placement, rather than the prohibition, of new rangeland developments.

Wilderness designation would result in the modification of the current Allotment Management Plan (AMP) for Rancho Alegre and the development and implementation of AMPs for the Headquarters and Stokes Flat allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

If the region experiences a population increase as a result of coal development north of the WSA, the impacts to livestock operations from closing the area to unauthorized vehicle use could be substantial.

f. Timber Harvest

Approximately 4,000 cords of firewood and other wood products would be excluded from the area's available woodlands. This would reduce available sources of firewood and fence posts to a limited degree since these areas are of low volume and have poor access.

g. Recreation

Recreation activities which require motorized vehicles would be impacted by wilderness designation. In the Mesita Blanca WSA, this would primarily affect rockhounds who drive to collecting areas and some deer hunters who drive into camping areas. Recreational use of the Red Hill Cinder Cone would not be affected, since the road, which provides access to the base of the Cinder Cone, is not inside the WSA.

By preserving the natural values and solitude which exist in the Mesita Blanca WSA, wilderness designation would also ensure that

present opportunities for primitive recreation would continue to be available to meet future needs.

h. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with significant long-term Congressional protection.

Wilderness management would ensure the preservation of the Mesita Blanca WSA's existing natural character and would maintain the opportunities for solitude which exist in the WSA. The archaeological sites, geologic features, and vegetation present in the WSA would be protected in a natural environment for enjoyment and study by present and future generations.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 16,429 acres of public land within the Mesita Blanca WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and woodcutting. Coal development is predicted in the region. These potential uses could result in significant impacts to wilderness values. Impacts to air, education/research, Native American uses, and realty actions were clearly insignificant; therefore they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Mesita Blanca WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

New rangeland developments and woodcutting could result in significant long-term degradation of wilderness values. Coal development within the region could result in increased human presence in the area. This could further reduce opportunities for primitive recreation and solitude.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Watershed management actions, including watershed tillage and water control structures, would be conducted as described in the Divide Management Framework Plan (BLM 1983). The specific locations and types of projects would be identified in a site-specific watershed plan to be developed for the area.

Continued vehicular access for ranch operations, recreation, mineral exploration, and woodcutting could result in additional surface disturbance and increased local erosion.

b. Wildlife

If increases in human activity occur in the area as a result of continued livestock grazing, woodcutting, and regional coal development, wildlife habitat could be impacted and wildlife harassment and poaching could increase.

c. Visual

Most of the WSA would be managed as VRM Class III, which allows moderate changes in the landscape. The remainder of the WSA would be managed as VRM Class IV. Potential uses could result in long-term degradation of the visual resources in the area.

d. Cultural

There would be no impacts to possible future research or stabilization methods. Unrestricted vehicular access could continue the potential for archaeological vandalism.

If nonwilderness management results in the alteration of the natural context of archaeological sites, it could reduce the scientific potential of the sites. This reduction would result from the loss of information concerning how earlier people related to their surrounding environment.

e. Minerals

There would be no impacts to minerals. Exploration and development would be regulated to prevent unnecessary and undue degradation. No economic benefits would be lost.

f. Livestock Grazing

There would be no impact to livestock grazing. Motorized vehicles could be utilized as needed.

If coal development occurs in the region, it could result in increased surface disturbance and harassment of livestock.

g. Timber Harvest

The timber resources of the area would be available for woodcutting. This would not significantly increase the total amount of wood products available in the region.

h. Recreation

There would be no impact to present low levels of recreational use. The area would remain open to vehicular dependent recreational uses.

APPENDIX U

PRESILLA WSA (NM-020-037)

I. GENERAL DESCRIPTION

A. Location

The Presilla Wilderness Study Area (WSA) is located east of the Rio Grande, about 2 miles east of Socorro, New Mexico.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Loma de las Canas, New Mexico quadrangle at the 7 1/2-minute scale.

B. Climate and Topography

The Presilla WSA is characterized by a semiarid climate with clear and sunny days, large diurnal temperature ranges, low humidity, and scant rainfall.

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours, 40° to 50°F, and moderately cold at night, 15° to 30°F. Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 mph.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The western portion of the WSA contains mesa benchlands cut by large arroyos, while the eastern portion is dominated by rugged limestone and sandstone hills which, in places, form parallel ridges trending north-south. Low granitic ridges rise slightly above the surrounding terrain in T. 3 S., R. 1 E., Sections 11 and 14. There are also areas of coppice dunes and scenic box canyons. Elevation varies from 4,700 feet to 5,450 feet. Drainages include portions of Arroyo del Tajo, Arroyo de la Presilla, Arroyo de Tio Bartolo, and Arroyo Tinajas.

C. Land Status

The WSA contains approximately 8,680 acres of public land. There are no state or private inholdings. (See Map 21 for land status within the WSA boundary.)

Approximately 760 acres of the Presilla WSA are located within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Extension Area due to its proximity to targeting locations within the Missile Range proper.

MAP 25
VERANITO WSA (NM 020-035)
SIERRA de las CANAS WSA
(NM 020-038) MAP 22
PRESILLA WSA (NM 020-037)
 MAP 21

Legend

- WSA BOUNDARY
 --- AMENDED BOUNDARY

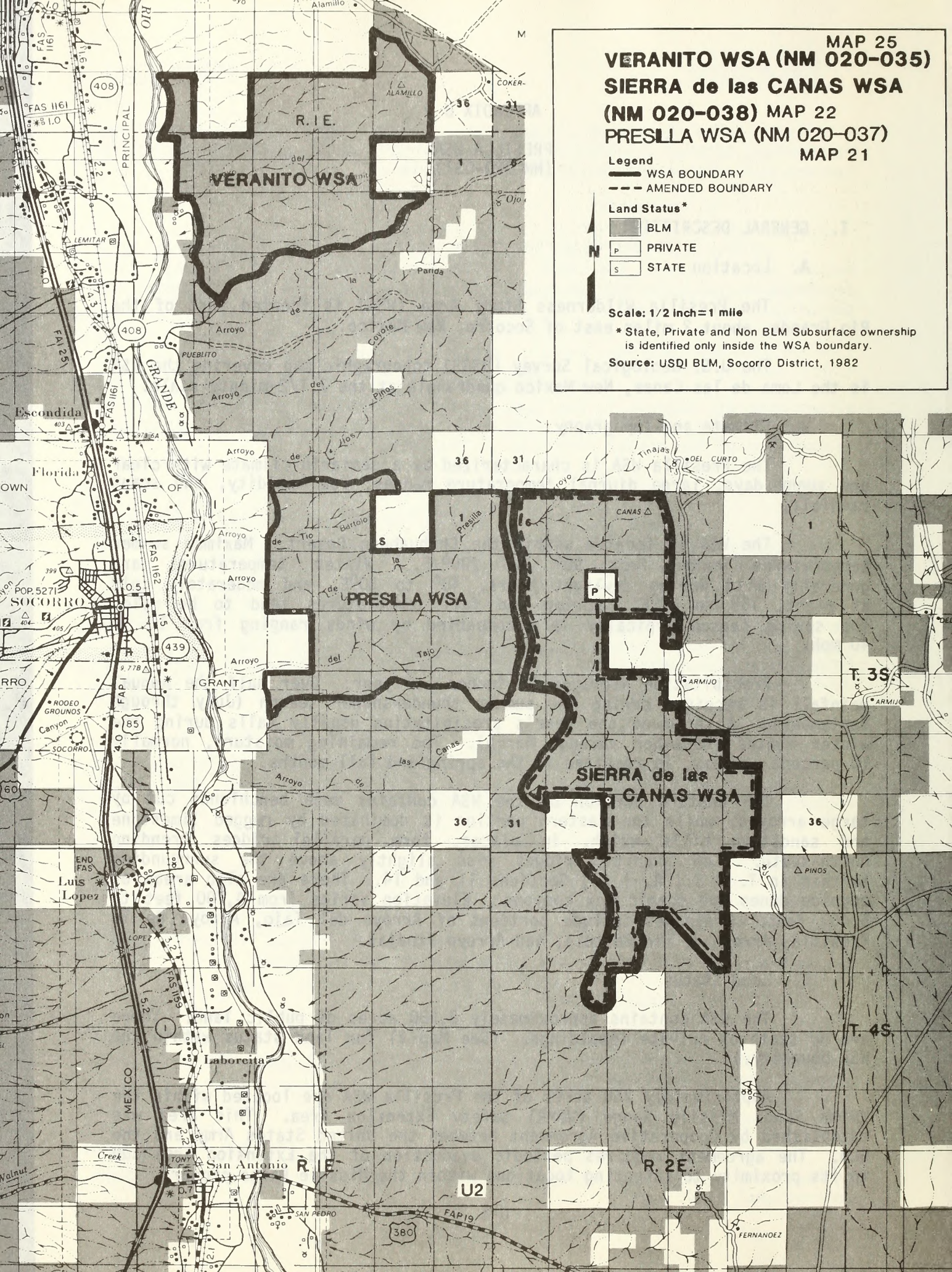
Land Status*

- BLM
 P PRIVATE
 S STATE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982



D. Access

The Presilla WSA has excellent physical and legal access. The Quebradas road forms the eastern boundary of the WSA and the Wilson Hill road parallels the western boundary of the WSA. Roads also form the northern and southern boundaries of the WSA. In addition to these boundary roads, there are vehicle routes running throughout the WSA.

II. EXISTING RESOURCES

A. Geology

The Presilla WSA is situated within the Basin and Range Physiographic Province. Specifically, it is located in the Socorro trough, a faulted, tectonic depression filled with unconsolidated sediments. The WSA is also situated within the Rio Grande Rift, a tensional feature in the earth's crust, which extends from southern Colorado to the El Paso, Texas vicinity. Records of past earthquakes and pediment surfaces offset by fault scarps indicate that tectonic forces are still active within the Rift. The City of Socorro vicinity is especially seismically active.

The western portion of the WSA contains late Tertiary valley-fill sediments of the Santa Fe formation and Quaternary alluvium. The eastern portion of the WSA contains outcrops of Pennsylvanian age Madera limestone on several exposures of Precambrian granite.

B. Water

The Presilla WSA is located within the Rio Grande Basin. Surface water drainage is integrated with the Rio Grande by means of a system of ephemeral arroyos. Surface flows occur immediately after rainfall, usually as a result of summer thundershowers. Flow periods are short and may be widely spaced in time due to sporadic rainfall patterns. Major drainages in the WSA include portions of Arroyo de la Presilla, Arroyo Tinajas, and Arroyo del Tajo.

Portions of four watersheds are within the Presilla WSA. In general, the area is classified in the slight sediment yield class and in the moderate erosion class. Sheet and gully erosion occur following summer thundershowers and all four watersheds contribute some sediment to the Rio Grande.

Major underground aquifers in the WSA are Pennsylvanian age Madera limestone, Tertiary age Santa Fe formation, and Quaternary age alluvium. Water quality was analyzed from Pueblito Well which is on the southern boundary of the WSA, and is considered representative of the WSA. The analysis indicates a high dissolved solids content due to mineralization. Ground water quality is within the recommended limits for livestock and wildlife use.

C. Soils

Gravelly soils on steep slopes cover most of the WSA. Limestone rock outcrop and some basalt is common on steep slopes. Soil depths range from shallow to deep and textures are predominantly gravelly to extremely gravelly sandy loams and loams. All of the soils in the WSA are calcareous in the substratum and some have an indurated caliche layer. There is a small area of deep sandy soils on the gentler slopes between Arroyo del Tajo and Arroyo de la Presilla along the western boundary.

D. Vegetation

1. General

The vegetation and associated range sites within the Presilla WSA consist of three major types:

Vegetation Type	Range Site	Federal Acres
Creosote	Gravelly, Limestone hills, Igneous hills	7,403
Desert shrub	Sandy	1,261
Pinyon-juniper	Limestone hills	16

The creosote type is the most prevalent in the WSA and contains other shrubs such as snakeweed, Mormon tea, and mesquite. Common grasses include fluffgrass, black grama, threeawns, dropseeds, bush muhly, and galleta. Annuals are an important part of this type and include annual snakeweed, common bahia, buckwheats, spectaclepod, sixweeks grama, sixweeks threeawn, and windmill grass.

The desert shrub type in the WSA is dominated by broom dalea and occurs on coppice dunes and deep sandy soil. Other shrubs are mesquite, snakeweed, sand sage, littleleaf sumac, and winterfat. Common grasses include fluffgrass and dropseeds.

Pinyon-juniper is found on a small area in the southeast part of the WSA, with one-seed juniper being the most common tree. Shrubs include snakeweed, rabbitbrush, squawbush, brickelbush, and Apacheplume. The common grasses are fluffgrass and slim tridens.

2. Threatened or Endangered Plant Species

Spellenberg (1977) and the New Mexico State Heritage Program (1983) do not list any threatened, endangered, or state-listed plant species in the WSA. The following species have been encountered near the area and probably occur within the WSA:

Species: Cryptantha paysonii

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Nearly level limestone shelves and ridgetops.

Species: Thelypodopsis purpusii

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Canyons and arroyo bottoms.

E. Wildlife

The WSA supports approximately 213 wildlife species including 27 mammal species, 41 reptile and amphibian species, and 145 resident and

migratory bird species. Great horned owls have been observed roosting in canyon walls in Arroyo del Tajo. Other raptors, including red-tailed hawks, prairie falcons, and Cooper's hawks, populate the area. Doves, scaled quail, and various songbirds can also be seen. Tinajas (natural sinkholes in the dry arroyo bottoms) provide water on an intermittent basis, thus creating important microhabitats which attract and concentrate many species. Arroyos with abundant shrubs offer good habitat conditions for wildlife. Mammals which can be found in this locale include woodrats, jackrabbits, rock squirrels, gray fox, and mule deer. Rattlesnakes, side blotched and collared lizards, and coachwhip snakes are also present.

The Presilla WSA contains two major Standard Habitat Sites (SHS's). These SHS's are described briefly below.

1. Creosote Hill

The principal areas in the creosote hill SHS are the rolling upland hills east of the Rio Grande. Ground cover is sparse where creosote occurs in thick stands. This area has many arroyos that run toward the river. The arroyo bottoms have thick stands of Apacheplume and littleleaf sumac with creosote on the south-facing slopes and black grama on the north-facing sides. Some of the arroyos are several hundred meters across. The most diversity in plants and animals occurs in the arroyo bottoms, with little species diversity between the arroyos where creosote is the dominant plant. The most common wildlife species within this SHS are coyotes, black-tailed jackrabbits, and desert cottontails.

2. Mesquite Rolling Upland

The mesquite rolling upland SHS is a narrow band of vegetation that begins at the foothills heading east from the Rio Grande. It divides the riparian vegetation along the river from the creosote hills. It provides good cover for many species. This area is often very hot in the summer, lacking the breezes found in the hills and the humidity from the river. Ground cover is sparse and erosion is quite evident as some of the mesquite clumps are several feet higher than the surface in between. The most common wildlife species within this SHS are coyotes, black-tailed jackrabbits, desert cottontails, a few mule deer, and various songbirds.

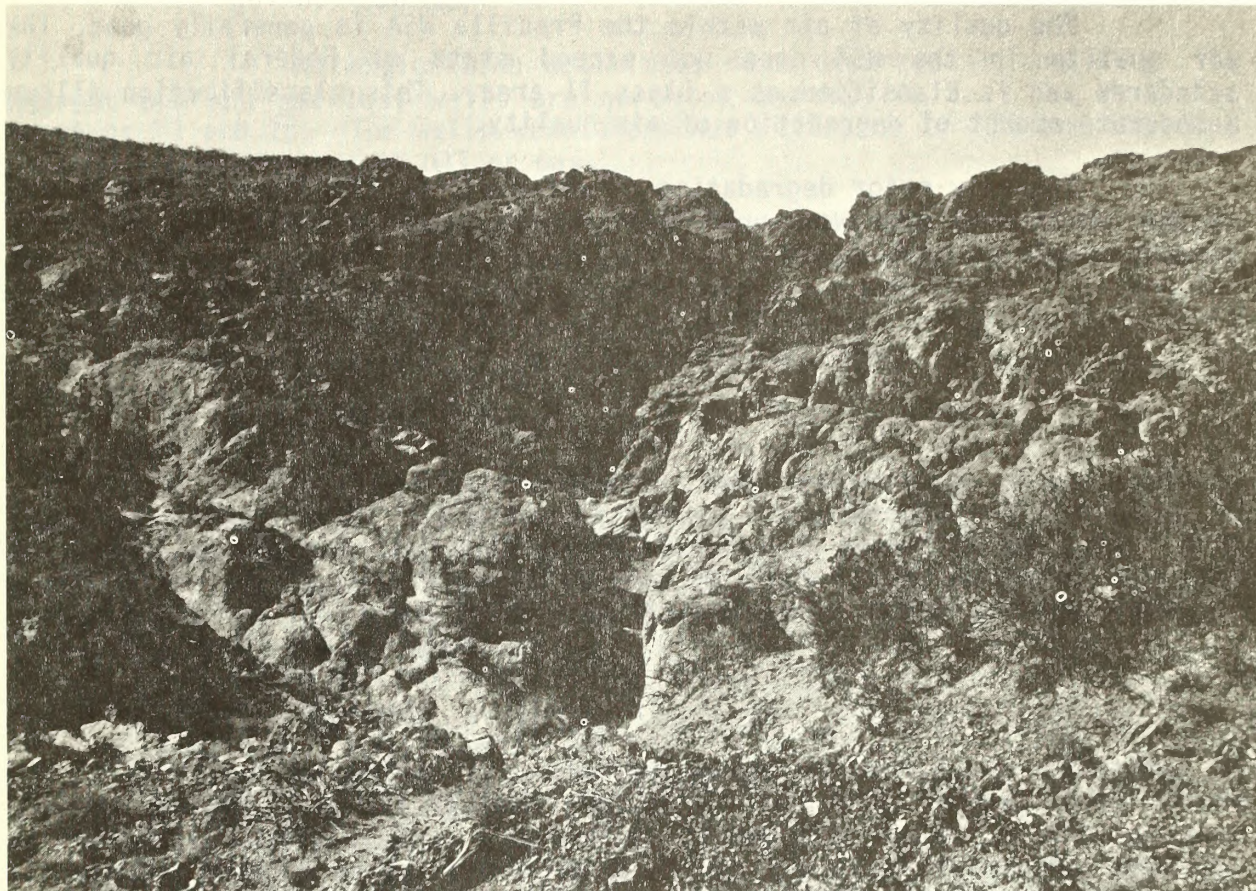
F. Visual

The Presilla WSA is characterized by rolling benchlands which rise above the Rio Grande floodplain in the west and rugged north-south trending ridges of alternating bands of red sandstone and white limestone in the eastern portion of the area. These landforms have been cut by numerous drainages, producing a diverse visual landscape. The Arroyo del Tajo, Arroyo de Tio Bartolo, and Presilla Boxes are localized areas of outstanding visual quality characterized by various erosional features, including water-sculpted limestone and granite walls.

High points in the WSA offer vistas of the Rio Grande Valley and the Magdalena Mountains to the west and the Sierra de las Canas to the east. The visual qualities of the WSA are given added significance by their location. Rising above the eastern bank of the Rio Grande, the WSA is an

important component in the visual landscape of the City of Socorro and for travelers along U.S. Highway 60 and Interstate 25.

The entire WSA is within a Visual Resource Management Class IV area.



West end of the Arroyo del Tajo Box.

G. Cultural

The WSA contains seven known cultural sites ranging from small structures of unknown function and date, an archaic lithic scatter, and a quarry, to a unique pictograph site relating to a Piro ceremonial site.

Previous BLM and private work in the area indicate that more than 1 mile from the river, the site density falls off, and those sites that do exist are usually associated with water sources or sand dunes.

A site of major significance in the WSA is the Arroyo del Tajo pictographs. They consist of over 75 figures painted in a shallow rock shelter on the north side of the arroyo. The figures represent a series of events by using various pueblo religious figures and symbols. They were

most likely painted by Piro Indians, a group that inhabited over 20 settlements along the Rio Grande before their abandonment after the Pueblo Revolt of 1680. A pictograph site representing a series of events is virtually unique in the Southwest.

H. Air

The quality of air within the Presilla WSA is generally good. The air quality in the WSA does not exceed state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

a. Oil and Gas

No exploration activities have occurred in the WSA. The nearest oil and gas test wells are north of the WSA in T. 1 S., R. 1 E., Sections 13 and 26. The wells were abandoned at depths of 800 and 860 feet with no reported shows of oil or gas.

The potential for discovery of oil and gas in the WSA is low. Heat and faulting associated with the Rio Grande Rift have probably prevented the accumulation and entrapment of petroleum. A special stipulation is attached to 200 acres in T. 3 S., R. 1 E., Section 14 to protect the cultural values in the Tinajas Natural Area.

b. Geothermal

In the City of Socorro area, the presence of hot springs, high heat flow, steep geothermal gradients, and geophysical evidence of shallow magma chambers indicate that a heat source underlies the area. This heat source may extend eastward under the WSA. The potential for the occurrence of a low temperature heat source which could provide heat for direct-use applications is moderate.

c. Uranium

Uranium mineralization occurs in veins and fractures in granite outcrops in the eastern portion of the WSA. Higher than normal radioactivity and anomalous geochemical values also occur in the granite. Geochemical uranium values are 5 to 200 times the value for normal granite, while radioactivity is 3 to 24 times normal background radiation. The potential for discovery of a uranium ore deposit is moderate.

2. Nonenergy Minerals

a. Locatable Minerals

(1) Fluorspar, Barite, Lead, Zinc

There are two known fluorspar deposits in or near the WSA: the Gonzales prospect in T. 3 S., R. 1 E., Section 2 and the La Bonita prospect in T. 3 S., R. 1 E., Section 12. Fluorspar and barite with minor amounts of lead and zinc occur along faults and fractures in Precambrian granite and the Madera limestone. These deposits are small and appear to have low to moderate potential for discovery of economic deposits.

(2) Copper

Copper mineralization occurs about 1 1/2 miles north of the WSA in T. 2 S., R. 1 E., Section 26 at Minas del Chupadero. The

mineralization occurs as irregular stratabound deposits in sandstones in the Pennsylvanian Moya formation. Although the potential appears to be low, deposits of this type could extend into the extreme eastern portion of the WSA.

b. Saleable Minerals

(1) Sand and Gravel

Sand and gravel occur in the Santa Fe formation and in Quaternary alluvium within the western portion of the WSA. The WSA has moderate favorability for the development of these resources.

(2) Building Stone/Aggregate

The eastern portion of the WSA contains limestone that has a low to moderate potential for use in various construction projects.

B. Livestock Grazing

1. Allotments

All of one and parts of four grazing allotments are within the boundary of the Presilla WSA. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Tio Bartolo 1258	4,806	365	4,806	100%
Four Hills 1259	6,132	360	406	7%
Las Canas 1262	12,312	1,560	941	8%
Rio Grande 1288	4,405	315	916	21%
Arroyo del Tajo 1287	4,320	264	1,611	37%
TOTAL			8,680	

Note: ^{a/}Information shown in table reflects only Federal acres and animal unit months (AUMs).

2. Ranch Management

Vehicle routes in the WSA are used by permittees to check the condition of livestock and to deliver salt and minerals to livestock. There are no rangeland developments in the WSA which require motorized access for maintenance.

A 1/4 mile of interior fence on the Four Hills allotment (1259) and the following boundary fences are the only rangeland developments on public land located within the WSA.

Boundary Fences:

Four Hills (1259) and Tio Bartolo (1258)	2 6/10 miles
Tio Bartolo (1258) and Las Canas (1262)	1/10 mile
Tio Bartolo (1258) and Arroyo del Tajo (1287)	2/10 mile
Tio Bartolo (1258) and Rio Grande (1288)	1 7/10 miles
Arroyo del Tajo (1287) and Las Canas (1262)	2 3/10 miles
Arroyo del Tajo (1287) and Rio Grande (1288)	4/10 mile

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

C. Recreation

The Presilla WSA lies 2 miles east of the City of Socorro and has excellent public access. This excellent access and the presence of interesting landforms including sand dunes, colorful arroyos, and scenic box canyons have resulted in a high level of recreational use relative to other public land in the vicinity of Socorro. Traditional uses in the area include deer and quail hunting, off-road vehicle (ORV) use along the arroyos and vehicle routes, rock collecting, hiking, camping, and rock climbing. The major north-south vehicle route through the WSA is designated as open to ORV use. The remainder of the WSA is closed to ORV use. Despite this designation, ORV use occurs along the larger arroyos and on other vehicle routes.

Publicity resulting from the BLM's designation of the Tinajas Natural Area of Critical Environmental Concern (ACEC) and interpretation at the Arroyo del Tajo pictograph site has resulted in increased public awareness and use, especially archaeological sightseeing in the Arroyo del Tajo area.

The recreational potential of the Presilla WSA as a day use area is high because of natural and cultural resources, proximity to the City of Socorro, and excellent public access.

D. Education/Research

The WSA has been utilized by the New Mexico Institute of Mining and Technology for geologic studies, research purposes, and for organized recreational outings. The potential for future educational and research uses in the WSA is high due to its proximity to the City of Socorro and the archaeological and natural resources of the area.

E. Cultural

In May 1981, the 1,280 acres surrounding the Arroyo del Tajo pictographs were designated an ACEC under the name Tinajas Natural Area. A short trail leads visitors to a register and the pictograph site.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

Pre-Federal Land Policy and Management Act (FLPMA) and post-FLPMA impacts affect the quality of the naturalness of the Presilla WSA. These impacts are discussed separately.

Pre-FLPMA impacts on the WSA's naturalness include 5 miles of once bladed vehicle routes, approximately 10 miles of barbed wire fence, 8 mineral prospecting pits, and 2 mine shafts.

The vehicle routes through the area are the most noticeable impact on naturalness. The route along the Arroyo Tinajas and south into the center of the WSA is evident from vantage points on the western half of the area. The routes are most noticeable where they cross hillsides or the sides of the larger arroyos.

The mineral prospecting pits are all located in T. 2 S., R. 1 E., Sections 34 and 35. This concentration reduces the apparent naturalness of this portion of the WSA. The mine shafts are located near Arroyo Tinajas. The cumulative impact of vehicle routes, prospect pits, and mine shafts reduces the apparent naturalness of the central and northern portions of the WSA.

Human activities outside the WSA have a slight impact on the apparent naturalness of portions of the WSA. An old fluorspar mine and associated structures and dumps are located in T. 3 S., R. 1 E., Section 2. This section is almost surrounded by the WSA. The mine and associated development are visible from portions of the WSA. A large windmill and storage tank are located on a high ridge adjacent to the southern boundary of the WSA. The windmill is visible from most points in the central and southern portions of the WSA. The inactive mine and the windmill detract slightly from the apparent naturalness of portions of the WSA.

The eastern and western portions of the WSA generally appear natural. The impacted central and northern portions of the WSA cannot be separated from the WSA to improve the overall naturalness of the area. Although portions of the WSA appear natural, the developments in the central portion of the WSA reduce the overall naturalness of the WSA.

Post-FLPMA impacts on the WSA's naturalness include approximately 5 miles of access roads and 2 drill pads constructed in 1978 and 1979. Over 2 miles of these roads were originally constructed prior to the passage of FLPMA. However, they were not maintained after construction, although maintenance was needed, and thus failed to meet the definition of a road during wilderness inventory. The roads and drill pads are located in the center of the WSA and greatly reduce the naturalness of the WSA's core.

While portions of the WSA are natural, mining activity and vehicle routes have impacted the overall quality of the naturalness of the Presilla WSA.

b. Solitude

The Presilla WSA contains numerous large east-west trending arroyos. The extensive, convoluted drainage systems and the resulting topographic screening offer visitors secluded areas and result in good opportunities for solitude. Opportunities for solitude are slightly reduced in Arroyo del Tajo because the scenic quality, geologic features, pictographs, and ease of access tend to concentrate visitors in this area.

The feeling of solitude is impacted slightly in the Arroyo del Tajo area by a large windmill and storage tank which are located on a ridge overlooking the pictograph site.

c. Primitive and Unconfined Recreation

The Presilla WSA contains a variety of landforms which provide visual interest, including colorful arroyos with interesting erosional features such as narrow water-sculpted limestone and granite boxes, sand dunes, and steep ridges. The WSA also contains an interpretive site based on significant Piro Indian pictographs.

The natural and cultural features of the WSA provide outstanding opportunities for day hiking, backpacking, camping, photography, various types of sightseeing, and nature studies.

2. Special Features

The Presilla WSA contains the Arroyo del Tajo pictograph site which consists of more than 75 figures representing Piro Pueblo religious figures and symbols. The pictograph site, representing a series of events, is virtually unique in the Southwest. Arroyo del Tajo, Arroyo Tinajas, and Arroyo de Tio Bartolo also contain erosional features which are highly scenic. The value of these supplemental qualities is enhanced by their proximity to the City of Socorro and relative ease of access.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Presilla WSA as being within the Chihuahuan Desert Province. The potential natural vegetation is grama-tobosa shrubsteppe.

b. Distance from Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours, Las Cruces New Mexico within 3 hours, and El Paso, Texas within 4 hours driving time of the WSA.

B. Manageability

Both positive and negative factors affect the potential of the Presilla WSA to be managed as wilderness. These include existing access, visibility of boundaries, concentration of visitor use, special features, and the area's existing naturalness.

Positive factors influencing the manageability of the WSA include existing access and the visibility of boundaries. Visitors can enter the area from almost any point and thus tend to disperse themselves throughout the area. Visitors may enter and leave the WSA without leaving land administered by the BLM.

On-the-ground management of the WSA would be enhanced by the visibility of its boundaries. Most of the boundaries are along maintained roads. The boundaries are easy to identify and would reduce conflicts from unauthorized uses or unintentional trespass.

There is a potential for concentrated visitor use in the Arroyo del Tajo box because of the ease of access and the area's special features. Concentration of use in the Arroyo del Tajo could diminish the ability to manage this small portion of the area for outstanding solitude.

The easternmost portion of the Presilla WSA lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Extension Area must be evacuated of all human inhabitants during missile firings. The availability of the Extension Area is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Extension Area to recover missile debris and to place tracking equipment. Potential wilderness manageability problems associated with WSMR access needs would not be significant because the area involved within the WSA is small.

A significant issue concerning the manageability of the Presilla WSA as wilderness is the area's existing quality of naturalness and the potential for rehabilitating the post-FLPMA roads in the area. Rehabilitation would require hauling in soil to recontour some of the road cuts across slopes, knocking down the road berms, and reseeding the disturbed area with native species. These measures could reduce the impact of the roads on the area's apparent naturalness. With adequate rainfall and rehabilitation measures, the roads could become less noticeable in the long-term. However, these rehabilitation measures offer poor potential in returning the WSA to a natural state.

Because of the WSA's existing low quality naturalness and poor potential for returning the area to a substantially natural state, the BLM could not manage the area to provide wilderness values.

V. PUBLIC INVOLVEMENT OVERVIEW

The New Mexico Wilderness Study Area Proposals (BLM 1980) deferred a decision on the Presilla unit's suitability as a WSA to allow the BLM time to evaluate the rehabilitation potential of the area's post-Federal Land Policy and Management Act (FLPMA) mining developments. During public review of the proposal to defer a decision, public comments were received in the form of personal letters, form letters, and petitions.

Eleven personal letters favored wilderness review of the Presilla unit. Supporting reasons included size, naturalness, opportunities for solitude and recreation, and supplemental values. Form letters and petitions received during the comment period listed the Presilla unit as one of the areas supported for further wilderness review.

Four personal letters opposed further wilderness review of the Presilla unit. Supporting reasons included mining and range impacts, the lack of opportunities for solitude, and potential resource conflicts.

After a reevaluation of Presilla unit's wilderness characteristics based on these public comments, impacts to the area's naturalness, and the potential for rehabilitation of the post-FLPMA developments, the BLM released the entire Presilla area from further wilderness review in the New Mexico Wilderness Study Area Decisions (BLM 1980).

The BLM decision to release the entire Presilla area from further wilderness review was protested to the BLM New Mexico State Director. The State Director denied the protest and his decision was appealed to the Interior Board of Land Appeals (IBLA).

After reviewing the case, the IBLA quoted the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) which states, "...impacts resulting from unauthorized activities will not disqualify an area from WSA status." IBLA then reversed the BLM decision denying the protest and remanded the Presilla unit to the BLM as a WSA. As a result of this ruling, Presilla is a WSA and its suitability for wilderness designation was evaluated in the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984).

During the public comment period on the Las Cruces District Wilderness Supplemental Draft Environmental Assessment (BLM 1984), a total of 44 personal inputs were received on the Presilla WSA. Thirty inputs were in favor and fourteen were opposed to wilderness designation.

Support for wilderness designation of the Presilla WSA centered around the WSA's proximity to the community of Socorro, which was felt to enhance its recreational and solitude values as well as supplemental values represented by the Arroyo del Tajo pictograph site and the WSA's visual resources. The BLM reached similar conclusions regarding these wilderness values in the draft version of this report. The primary reason for the nonsuitable recommendation for the Presilla WSA was the quality of the area's naturalness. Several commentators felt the BLM had improperly considered post-FLPMA impacts in assessing the naturalness of the WSA. A review of the draft version of this report indicates that the quality of

naturalness was properly assessed based on pre-FLPMA impacts and that post-FLPMA impacts were discussed only as factors which further reduced the area's low naturalness quality.

It was also noted that the BLM failed to reclaim the post-FLPMA mining roads. The Socorro Resource Area is presently pursuing rehabilitation of these impacts.

Fourteen personal inputs agreed with the recommended action for the Presilla WSA, but provided no new information which required response. White Sands Missile Range (WSMR) noted that approximately 760 acres in the easternmost portion of the WSA is in the Safety Extension Area and that WSMR would be opposed to wilderness designation of this portion of the WSA. The draft Wilderness Analysis Report failed to address the WSMR Safety Extension Area. This correction has been incorporated into the appropriate sections of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under the All Wilderness Alternative, the entire 8,680 acres of public land within the Presilla WSA would be recommended suitable for wilderness designation. (See Map 21 for the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts on air quality and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

The potential for the discovery of oil and gas in the WSA is low. Therefore, wilderness designation would have minimal impacts to the oil and gas industry.

The potential for the occurrence of geothermal resources is moderate. Denying geothermal exploration and leasing could prevent the discovery and development of low-temperature, direct-use geothermal application. Because of the moderate to high potential for geothermal resources in a large area surrounding the City of Socorro, wilderness designation of the Presilla WSA would not result in significant impacts to geothermal resources.

Low to moderate potential exists for the discovery of uranium, fluorspar, barite, lead, zinc, and copper. Valid claims located before wilderness designation could be developed to their full potential. However, during development, mining claimants could incur additional costs of operation depending on the type of environmental restrictions.

It is assumed that no new exploration or location of mining claims would be allowed after wilderness designation. Mineral trends could not be followed outside of existing valid claim boundaries. Although there would not be an opportunity to fully assess the area's mineral potential, wilderness designation would not have significant impacts on locatable minerals due to low to moderate potential.

The WSA contains deposits of sand and gravel and building stone. However, deposits of such materials are widespread in the surrounding areas. Denying material sales within the WSA would have negligible impacts on the availability of these materials.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under wilderness management, motorized access on existing vehicle trails in the WSA would not be allowed. The 5 miles of bladed post-FLPMA mining access routes in the central portion of the WSA could be closed and rehabilitated, which could result in a slight increase in vegetative ground cover. This could also reduce the potential for accelerated erosion along these vehicle routes.

Although the restrictions of wilderness management on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation, including the habitat of two plants identified by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation), the impacts would not be significant.

b. Wildlife

Under wilderness management, wildlife habitat would be protected from destruction and wildlife from disturbance as a result of restrictions on surface disturbing and mechanized activities. Restricted vehicular access could lessen the potential for harassment and poaching of wildlife and reduce hunting pressure in the area.

Since existing and proposed BLM plans do not identify any potential uses or activities that could result in extensive surface disturbance, the additional protection for wildlife provided by wilderness designation would not be significant.

c. Visual

Existing visual resources would be protected since the area would be managed as a Visual Resource Management (VRM) Class I. Only minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted.

Wilderness designation could result in partial rehabilitation of the post-FLPMA mining roads. This could result in a slight improvement in the visual quality of the central portion of the WSA which is most heavily impacted.

d. Cultural

Wilderness designation would provide additional long-term protection for the Arroyo del Tajo pictograph sites as well as other cultural resources in the WSA.

In the Tinajas Area of Critical Environmental Concern (ACEC), there is low profile on-site interpretation of the pictographs through signs. Since the Wilderness Management Policy (BLM 1981) would not normally allow interpretation activities, the existing signs and visitor register would be relocated.

e. Livestock Grazing

Livestock grazing is permissible and compatible with wilderness. Wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Generally, motorized access within the designated wilderness would not be permitted. Because there are no water developments or other rangeland developments in the WSA which require regular maintenance, there would be no significant impacts to existing livestock operations. The relatively small size of the WSA and existing access patterns along the periphery of the WSA would make it relatively easy to inspect and maintain fences by horseback.

f. Recreation

Vehicle dependent recreational uses would be prohibited. This would result in insignificant impacts because off-road vehicle (ORV) use or vehicle dependent recreation is low in the WSA and there are numerous other areas available for ORV use within the region.

Much of the recreational use in the WSA is associated with the pictographs in Arroyo del Tajo. This use would not be impacted by wilderness designation because the access road and trailhead which serve the site are outside the WSA boundaries. Wilderness designation would result in relocation of the visitor register and interpretive signs from the pictograph site to the trailhead which is outside the WSA.

Increased visitation in the Arroyo del Tajo could reduce the opportunities for solitude in the immediate area.

g. Wilderness Values

Wilderness designation would provide the wilderness values present in the Presilla WSA with significant long-term Congressional protection.

Wilderness designation would enhance the Presilla WSA's wilderness characteristics because it could result in a greater amount of rehabilitation on the post-FLPMA roads. Although the roads have poor potential for rehabilitation, in the long-term the roads could become less noticeable in the context of the entire WSA.

h. Other

Wilderness designation would restrict but not preclude access by White Sands Missile Range (WSMR) to recover debris or locate tracking equipment. Reasonable access would be granted after determining the method that would least impact wilderness values.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 8,680 acres of public land in the Presilla WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and recreation. Mining claims could be located in the area. Future market conditions could result in mineral development in the area, although based on the mineral potential of the area, this appears unlikely.

In the long-term, existing wilderness values could be significantly impacted because they would not receive Congressional protection. Impacts on air quality, wildlife, and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Presilla WSA would not be provided with long-term Congressional protection. Management of the area as specified in existing land-use plans would be subject to administrative change in the long-term. Construction of additional vehicle routes and surface disturbance associated with mining claims assessment work could significantly impact wilderness values in the long-term. Unrestricted recreation use could result in visitor concentrations which would reduce opportunities for solitude and degrade the quality of primitive recreation opportunities.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

The vehicle routes in the WSA would remain open to motorized access. The impacts to water, soils, and vegetation, including the plants identified by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation), would not be significant.

b. Recreation

Present use patterns would continue with use concentrated primarily along the larger arroyos. There would be no significant impacts on recreational use at Arroyo del Tajo because the existing ACEC would prevent conflicting uses on surrounding lands.

c. Visual

Under this alternative, the entire area would be managed as a VRM Class IV, which permits significant change in the basic elements of the landscape as a result of management actions. Surface disturbance associated with mining claim assessment work and construction of additional vehicle routes could impact the visual quality of the area in the long-term.

d. Cultural

Cultural resources in the WSA would not have the additional protection afforded by wilderness designation, but existing laws and regulations would prevent significant impacts.

e. Mineral

Energy minerals leasing would continue. Vehicle use in connection with exploration activities would be restricted to existing roads and trails. Any energy minerals drilling, development, or production activities on the 200 acres surrounding the pictographs in the Tinajas Natural Area would comply with the constraints of the energy minerals protective leasing stipulation for cultural values. Locatable minerals activities would be regulated under the 43 CFR 3809 Surface Management Regulations to prevent unnecessary and undue degradation. There would be no significant impacts to mineral resources under this alternative.

f. Livestock Grazing

Motorized vehicles could be utilized as needed for livestock management. There would be no impacts to livestock grazing under this alternative.

g. Other

There would be no impacts to the WSMR Safety Extension Area.

APPENDIX V

SIERRA DE LAS CANAS WSA (NM-020-038)

I. GENERAL DESCRIPTION

A. Location

The Sierra de las Canas (Mountains of the Canes) Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 7 air miles east of the City of Socorro.

The following U.S. Geological Survey (USGS) topographic maps cover the WSA:

Bustos Well, New Mexico	7 1/2-minute scale
Loma de las Canas, New Mexico	7 1/2-minute scale
Carthage, New Mexico	15-minute scale
San Antonio, New Mexico	15-minute scale

B. Climate and Topography

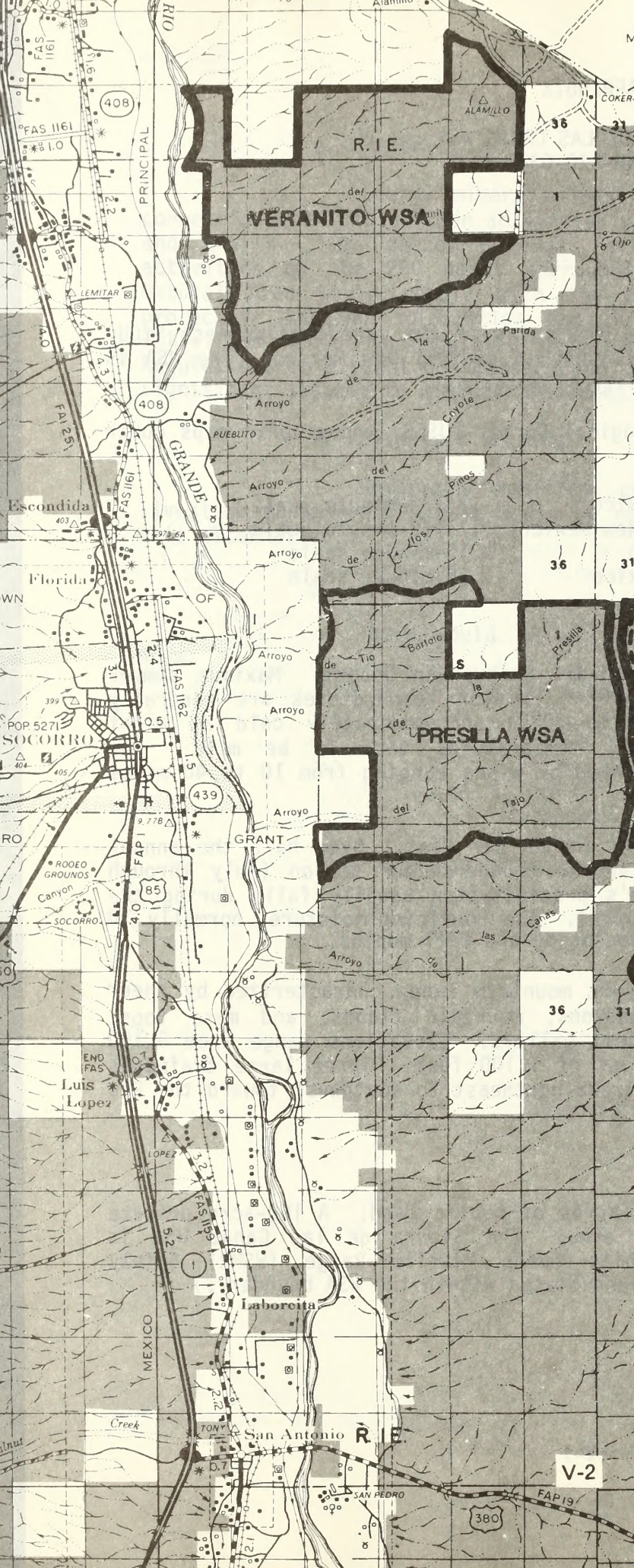
The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is a rugged desert mountain range characterized by sheer rock escarpments, deep narrow canyons, mountain ridges, and mesa tops, broken badlands, and isolated desert valleys. Elevations range from 5,100 to 6,200 feet with a maximum relief of 1,100 feet. Three large drainages are present within the WSA which trend northeast to southwest toward the Rio Grande.

C. Land Status

The WSA includes 12,838 acres of public land. A 160-acre private inholding is located within the area. The Sierra de las Canas WSA is located entirely within the White Sands Missile Range (WSMR) Safety Extension Area. (See Map 22 for land status within the WSA boundary.)



MAP 25
VERANITO WSA (NM 020-035)
SIERRA de las CANAS WSA
(NM 020-038) MAP 22
PRESILLA WSA (NM 020-037)
MAP 21

Legend
— WSA BOUNDARY
--- AMENDED BOUNDARY

Land Status*
BLM
PRIVATE
STATE

Scale: 1/2 Inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USQJ BLM, Socorro District, 1982

D. Access

Primary legal access to the WSA is provided by Quebradas Road which parallels the west boundary of the WSA. This road is maintained by BLM and is suitable for use by two-wheel drive vehicles. There are no vehicle access routes within the WSA.

II. EXISTING RESOURCES

A. Geology

The Sierra de las Canas WSA is located along the complexly faulted western margin of the Loma de las Canas uplift. This series of mountains, hills, and cuestas forms the highlands between the Rio Grande Rift to the west and the Jornada del Muerto basin to the east. The Loma de las Canas uplift merges into the Joyita-Los Pinos uplifts to the north and the San Pascual platform to the south.

Rock units present in the WSA range in age from Pennsylvanian to Mid-Tertiary. Pennsylvanian sediments of the Sandia and Madera formations crop out in the northern part of the WSA. They consist mainly of sandstones, shales, and limestones deposited in a shallow marine environment. The Permian age Abo, Yeso, and San Andres formations are present throughout the WSA. These rocks consist mainly of limestone, shale, sandstone, siltstone, and gypsum, and represent a change from terrestrial to lagoonal and shallow marine environments. The siltstone, shale, and sandstone of the Triassic age Dockum formation crop out in the eastern portion of the WSA. Volcanic rocks of the Tertiary age Datil formation also occur along the eastern margin of the WSA.

No paleontological inventory has been conducted within the WSA. However, the Abo formation is known to contain vertebrate, invertebrate, reptile, amphibian, plant, and insect fossils. A paleontological site is located approximately 1 mile to the west of the WSA in geological formations similar to those present within the WSA. This site has been under periodic study by a Smithsonian Institute paleontologist in recent years.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

There are no developed ground water sources within the WSA. Ground water may be present in the Permian age sandstone and limestone formations that occur in and adjacent to the WSA.

Ground water in Pueblito Well, which is located 2 miles west of the WSA, is considered as representative of the WSA. Analysis of ground water samples taken from this well indicates high dissolved solids due to mineralization but of suitable chemical quality for livestock purposes.

C. Soils

Approximately 75 percent of the soils within the WSA were developed from sandstone, limestone, or shale. These soils are typically very gravelly and shallow, and located on the upper and steeper slopes. Deep gravelly soils are present on lower slopes and in canyon bottoms.

Ten percent of the soils are gypsum influenced. There are small pockets of shallow soil over gypsum near the head of Arroyo del Tajo as well as small outcrops of rock gypsum on steep slopes throughout the WSA.

Fifteen percent of the WSA consists of deep and moderately deep loamy soils. They developed from loamy alluvial deposits and occur in small isolated areas within the WSA.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: desert shrub, pinyon-juniper, creosote, and wasteland.

The desert shrub vegetation type comprises approximately 10 percent of the surface area. The dominant plant species are creosote and black grama. Common shrub species are cholla, datil yucca, prickly pear, desert willow, ocotillo, honey mesquite, one-seed juniper, squawbush, winterfat, broom snakeweed, coldenia, and Mormon tea. Grasses are represented by spike dropseed, burrograss, ring muhly, sand muhly, gypgrass, fluffgrass, alkali sacaton, and galleta. Forbs include ironplant goldenweed, globemallow, and wild buckwheat.

The pinyon-juniper type is an important vegetation component of the WSA covering approximately 35 percent of the surface area. One-seed juniper and pinyon pine dominate; however, numerous plant species are represented in the community. The understory vegetation is dominated by warm-season grasses. The grama grasses are the most prevalent, sometimes constituting as much as 70 percent of the species composition of a vegetation site. Black grama has the highest composition followed by blue grama, sideoats grama, and hairy grama. Of lesser importance are various warm-season grasses, including purple muhly, galleta, Fendler threeawn, ring muhly, sand dropseed, and spike dropseed. Cool-season grasses include silver bluestem, Indian ricegrass, wolftail, bottlebrush squirreltail, and New Mexican feathergrass. Areas classified as pinyon-juniper that exist on soils with a high gypsum content are dominated by gypgrass. The shrub component of the pinyon-juniper community includes broom snakeweed, which in places comprises up to 30 percent of the composition. Other shrubs include datil yucca, mountain mahogany, feather peabush, Mormon tea, littleleaf sumac, squawbush, mariola, cholla, and prickly pear. Forbs present include ironplant goldenweed, Rocky Mountain zinnia, globemallow, hog potato, aster, and spectacle pod.

The creosote vegetation type comprises approximately 36 percent of the surface area. The dominant plant species are creosote, fluffgrass, bush muhly, and broom snakeweed. Other common shrub species include mesquite, mariola, and Mormon tea. Grasses are represented by black grama, galleta, and spike dropseed. Forbs include globemallow, desert holly, wild buckwheat, and pepperweed.

The WSA includes an area classified as wasteland. This area is characterized by extremely sparse vegetation cover which consists

primarily of twisted and gnarled junipers, creosote, and widely scattered grasses. Wasteland constitutes approximately 19 percent of the WSA.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of four Federally-listed and ten state-listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Five Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. These SHS's support 238 wildlife species, which include 52 mammal species, 53 reptile and amphibian species, and 133 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file in the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Estimated deer densities for this portion of the WSA are four animals per square mile. Densities in the remainder of the WSA are one to two deer per square mile. Pronghorn are not abundant in the WSA.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Badgers have been sighted in the WSA. Common small mammals include desert cottontails, black-tailed jackrabbits, white-throated woodrats, deer mice, and ground squirrels.

The near vertical rock escarpments, box canyons, and numerous exposed rock outcrops are particularly attractive to birds of prey. One golden eagle eyrie is known to be present within the WSA. Other birds which are commonly sighted include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and the western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The Fish and Wildlife Service furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. However, potential habitat exists for supporting migrating individuals because a sufficient prey base and water are available in the Rio Grande Valley. The biological assessment and related correspondence are on file in the Socorro Resource Area Office.

F. Visual

The WSA is dominated by near vertical, multicolored escarpments, twisted and convoluted badlands, narrow box canyons, and other topographic landforms which present considerable visual variety. Vistas of landscapes from high points within the WSA are impressive. The WSA is a desert mountain range with sparse vegetation cover; however, this characteristic accentuates the WSA's rugged starkness, visual immensity, and high solitude and natural values.

G. Cultural

Cultural sites in the WSA range from lithic scatters to at least one petroglyph site to several historic stone structures, one of which is reported to have served as a stage station. Eight sites are currently recorded within the boundaries of the WSA. In addition, over 100 cultural sites have been recorded within a 7-10 kilometer radius of the WSA, with the site types representing a diverse occupational continuum which dates to at least 4000 B.C. The probability for the occurrence of unrecorded sites within the WSA is considered high. However, the occurrence probability is lower than for lands adjacent to the Rio Grande Valley to the west.

H. Air

Generally, the quality of air within the Sierra de las Canas WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air-quality occurs during the spring months (March-May) when winds, commonly gusting in excess of 30 mph, result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Six noncompetitive oil and gas leases have been issued or are pending within the WSA. All leases were recently issued or filed and subject to Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review (BLM 1979). No exploration or development for oil and gas has occurred in the WSA to date.

The WSA is located in a Class IV favorability area, the least favorable class for discovery of oil and gas. Paleozoic rocks favorable for generation of oil and gas are present within the WSA but intense faulting precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The WSA is located in the Socorro Peak Geothermal Leasing Area and is within 6 miles of a known shallow magma body. In addition, a warm spring is located on the western boundary of the WSA. For these reasons, the WSA is considered to have a moderate favorability for the discovery of geothermal resources.

2. Locatable

At present, there are approximately 20 mining claims located within the WSA. The claims are staked on occurrences of uranium, copper, barite, or gypsum. No past mining activity of consequence has occurred in the WSA. However, unauthorized assessment work performed during December 1981 did impair wilderness values to a small degree. The work consisted of bulldozing approximately one acre to expose the underlying rock.

The WSA has potential for the occurrence of the following locatable minerals:

a. Copper

Copper deposits in Permian red beds are known to occur in a belt extending from Scholle to Carthage and passing through the WSA. Some of the deposits were mined in the past but have been uneconomic in recent years. The red beds crop out extensively in the WSA and are considered to have a moderate favorability for the occurrence of copper mineralization.

b. Uranium

Uranium is known to occur in Paleozoic limestones and may occur in Late-Tertiary valley-fill sediments in the area surrounding the WSA. Paleozoic limestones crop out in the WSA but past prospecting has not

disclosed any uranium occurrences and Late-Tertiary sediments do not crop out in the WSA. The WSA is considered to have low favorability for the discovery of uranium deposits.

c. Gypsum

The Permian age Yeso formation, which contains gypsum, is found throughout the WSA. The deposits are considered to have a low potential for use because of lack of local demand and the availability of more pure deposits in other parts of central New Mexico.

d. Barite, Fluorite, Lead, Zinc

Deposits of these minerals are known to occur along faults within Precambrian rocks and the Madera limestone in the area surrounding the WSA. Several occurrences of barite, fluorite, lead, and zinc are within a mile of the WSA boundary. The WSA has faulted outcrops of Madera limestone and is considered to be moderately favorable for the occurrence of such deposits.

3. Saleable

No material sales have been conducted within the WSA, and no future sales are anticipated. The WSA has potential for the development of the following saleable materials:

a. Sand and Gravel

The WSA does not contain large deposits of sand and gravel. Some deposits do exist in the larger arroyos, but their small size, lack of demand, and difficult access preclude development.

b. Limestone

The WSA is partly underlain by the San Andres limestone which may be of high enough purity for use as agricultural lime or in the manufacture of cement. These deposits are considered to have a moderate favorability for development if local demand for the material occurs.

B. Watershed

The majority of the WSA is located within the Canas Watershed with about 5 percent in the Parida Watershed. The WSA is largely a rough, rocky desert shrub terrain typical of the Rio Grande breaks. Soils are coarse textured, gravelly and range from deep to shallow over bedrock. Most soils have a desert pavement surface. Geologic erosion by wind and water is most active in arroyo channels and alluvial fans. Approximately 25 percent of the WSA falls within the critical erosion class and 75 percent in the moderate erosion class. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of five grazing allotments lie within the Sierra de las Canas WSA. All five allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Armijo Community	5,617	667	3,880	69%
Blackington Mountain	16,656	2,160	5,488	39%
Silver Road	14,744	1,607	120	0%
La Arenosa	9,682	852	170	2%
Las Canas	12,312	1,560	3,180	25%
TOTAL			12,838	

2. Ranch Management

Maintenance has been performed almost exclusively on horseback in the past. This practice would continue as needed.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Armijo Community	5 3/4 miles of fence
Blackington Mountain	7 1/10 miles of fence
La Arenosa	1 4/10 miles of fence
Las Canas	4 1/2 miles of fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned for the WSA at this time.

D. Recreation

The WSA is located within 45 minutes driving time of Socorro and is visible from the community and much of the Middle Rio Grande Valley. Existing recreational use of the WSA is low. However, the recreational use of the WSA is expected to increase in coming years due to its proximity to the Middle Rio Grande Valley, ease of access, and its high natural values.

E. Education/Research

The WSA is not currently being utilized for any known educational or research purpose. Education and research potential for the WSA may be significant for paleontological, cultural, wildlife, and natural ecosystem studies.

F. Wildlife

No specific actions are planned for the WSA at present. The WSA has not been identified by the New Mexico Department of Game and Fish for reintroduction of any species.

G. Other--Military

The WSA is within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper. In addition, WSMR has stated that it may be desirable to locate temporary tracking equipment in the WSA because of its elevation and view of the entire safety area.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the Sierra de las Canas WSA are light. Intrusions consist of approximately 19 miles of barbed wire fence. There are no vehicle routes, stock tanks, or related intrusions in the area.

Unauthorized assessment work, consisting of bulldozing approximately one acre of land, was performed on a mining claim within the WSA. The trespass occurred on the periphery of the WSA. It is believed that the area could be reclaimed so that the disturbance would be substantially unnoticeable in a few years.

The WSA is not only virtually free of obvious human impacts, it also represents one of New Mexico's least disturbed upper Chihuahuan Desert ecosystems. Although grazing use within the area has occurred over the past century, the absence of water combined with rugged topography has resulted in the WSA being subjected to only light grazing pressure by livestock.

b. Solitude

The WSA is a topographically serrated desert mountain range characterized by near vertical escarpments, steep slopes, and rugged canyons. The flanks of the mountains include broken badlands, arroyos, and desert. The topographic diversity coupled with the severity of much of the WSA's landforms ensure solitude opportunities of the highest quality.

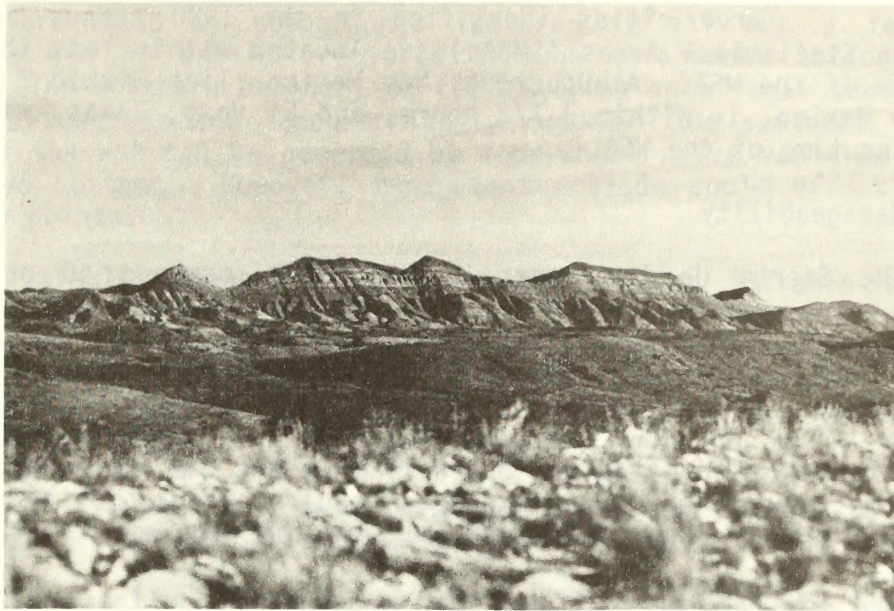
c. Primitive and Unconfined Recreation

This rugged desert mountain environment, with its colorful escarpments, canyons, and vistas, provides an outstanding setting for day hiking, backpacking, photography, deer hunting, and various types of sightseeing. The area is most attractive for these recreational uses during the cooler months.

These recreational opportunities are enhanced by the area's proximity to Socorro and Interstate 25 and the well maintained road which provides access to the western edge of the WSA.

2. Special Features

The WSA represents a fine example of the scenic value of a low elevation desert mountain range. The value of the area's scenic qualities is enhanced by its location. Rising above the eastern breaks of the Rio Grande Valley, the WSA is an important part of the visual landscape of the community of Socorro and for travelers along Interstate 25 and U.S. Highway 60. Especially appealing is the scenic quality of the WSA's broken and convoluted western escarpment, which during the late daylight hours, reflects variegated colors tinged with red.



Western Face of Sierra de las Canas.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Congressional designation of this area as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Sierra de las Canas WSA lies near the northern extreme of the Chihuahuan Desert Province and close to the southern edge of the Colorado Plateau Province as identified in the Bailey (1976) - Kuchler (1966) Classification System.

Potential natural vegetation consists of 4,488 acres of juniper-pinyon woodland in the Colorado Plateau Province and 8,350 acres of grama-tobosa shrubsteppe in the Chihuahuan Desert Province. However, because of the WSA's geographic position between the Chihuahuan Desert and the Colorado Plateau Provinces, these areas are not clearly distinctive. Instead, they tend to intergrade into one another to varying degrees.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico, lies within 2 hours, Las Cruces, New Mexico, is within 3 1/2 hours, and El Paso, Texas, within 4 1/2 hours driving time of the WSA.

B. Manageability

The Sierra de las Canas WSA could be managed to preserve the wilderness values which presently exist in the WSA. Manageability is a judgment made by the BLM after considering factors such as private inholdings, valid existing rights, topography, and the overall land ownership pattern.

Grandfathered livestock operations in the WSA are compatible with wilderness management, and such things as required access for maintenance of existing fences are not expected to create problems for wilderness management.

The mining claims within the WSA are located in the northern and east-central portion of the area. The impact these claims may have on wilderness management is difficult to predict at this time. Other than unauthorized assessment work performed on one claim, no mining activity of consequence has occurred in the WSA.

Six oil and gas leases have been issued or are pending within the WSA, but all are subject to the Interim Management Policy wilderness protection stipulations.

The Sierra de las Canas WSA lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Extension Area must be evacuated of all human inhabitants during missile firings. The availability of the Extension Area is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Extension Area to recover missile debris. However, no impacts of this nature have occurred within the WSA to date.

The presence of the WSA within the WSMR Safety Extension Area would require special management consideration to meet the military needs while preserving wilderness values and ensuring human safety. Access to recover possible missile debris could be granted after determining the method which would least impact wilderness values. However, this is not expected to produce significant problems because of the low probability of a missile impacting in the area.

WSMR has also stated that it may be desirable to locate temporary tracking equipment in the WSA because of its elevation and view of the entire safety area. The BLM will cooperate with WSMR to locate other suitable sites with similar characteristics outside the area. Based on the public land patterns and topography of the region, it is anticipated that other suitable sites would be available.

The wilderness management potential of the WSA in terms of effectively precluding vehicular access to the area is excellent. The WSA is bounded on the west by a BLM road from which off-road vehicle (ORV) access is prevented by topographic features in all but a few locales. Vehicle use can be easily precluded through management actions in these locations. The northern boundary of the WSA lies on a legal subdivision but the area is roadless and topographically rugged. The southern and eastern portions of the WSA can be accessed by four-wheel drive vehicles in several large arroyo bottoms. However, management actions could effectively close these entry points.

A single 160-acre private inholding which includes a perennial spring is located in the WSA. Should the landowner desire to construct a vehicle access route into his property and develop the spring site, the presence of this inholding within a designated wilderness would pose significant manageability problems. The acquisition by the BLM of the 160-acre private inholding through voluntary exchange would enhance the manageability of the WSA and also assist in maintaining the area's ecosystem and wildlife values. At this time, however, the acquisition of the inholding is a remote possibility because of the owner's opposition.

Other actions to enhance manageability of the WSA would be the future acquisition, through voluntary exchange, of approximately 2,500 acres of state land which lie adjacent to the WSA. In addition, a high potential exists for expanding the WSA northward if checkerboarded public land could be consolidated through the acquisition of state and private lands in future years.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has, with few exceptions, indicated support for designation of the Sierra de las Canas WSA as a wilderness area. Reasons cited have included the area's high naturalness values, outstanding solitude and recreation values, its proximity to Socorro and the Rio Grande Valley, and high scenic, wildlife, and ecological values. The lack of resource conflicts coupled with the area's manageability as wilderness were also mentioned as reasons for designating the area. A number of public comments urged the BLM to acquire the 160-acre private inholding within the WSA due to its importance to unit ecological and wildlife values.

Opposition to wilderness designation came from area permittees. Following adjustments to the WSA boundary, all but one permittee appeared satisfied that designation of the involved lands would not significantly hamper or interfere with their respective ranch operations.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Sierra de las Canas WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

Twenty-six letters were received on the draft version of this report. Four respondents were opposed to wilderness designation because: the WSA has a moderate favorability for geothermal resources, copper, barite, fluorite, lead, and zinc, and untested oil and gas potential; designation will simply attract increased public pressure on the area without compensating benefits; the area is unmanageable and of little value as wilderness; designation would impose hardship and cause difficulty in ranch operations; and WSMR will be restricted in its access and support needs. These factors were considered by the Area Manager in making his recommendation for the area. The boundary of the WSA was amended to reduce impacts resulting from limited access to a private inholding.

Twenty-two respondents supported wilderness designation for the Sierra de las Canas WSA. Reasons for this support centered around the area's wilderness values and minimal resource conflicts. It was also stated that the area's value as wilderness is enhanced by its scenic values, cultural sites, proximity to Socorro, and that it is an excellent example of an upper Chihuahuan Desert ecosystem.

There was also support for enhancing the area's wilderness values through the acquisition of the only private inholding in the WSA which also contains a perennial spring. The BLM agrees that the acquisition of the private inholding would be desirable to enhance wilderness values and manageability, but respects the landowner's desires in this matter. Acquisition of the inholding would be pursued only on a voluntary basis unless specifically authorized by Congress.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 12,838 acres of public land within the Sierra de las Canas WSA would be recommended suitable for wilderness designation. (See Map 22 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts to air and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the WSA is recommended suitable for wilderness designation, a U.S. Geological Survey and U.S. Bureau of Mines minerals survey would be conducted to supplement current data regarding the mineral-energy occurrence potential for the area.

a. Leasable

(1) Oil and Gas

The geologic environment of the WSA has a low potential for economically recoverable oil and gas reserves. Therefore, denying exploration and development would have little or no impact on oil and gas development in the WSA.

(2) Geothermal

The Sierra de las Canas WSA is prospectively valuable for geothermal resources. Wilderness designation would preclude any geothermal development within the area. Denying geothermal leasing, exploration, and development within the WSA would have little or no impact on geothermal development in the surrounding region.

b. Locatable

The WSA has potential for copper, uranium, gypsum, barite, fluorite, lead, and zinc. Based on current information, wilderness designation would have little impact, since most deposits of these minerals tend to be small and are not economically feasible to mine. Wilderness designation would prevent development of these small deposits.

c. Saleable

There would be no impact to saleable resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Designation of the WSA would maintain or enhance the existing water, soil, and vegetation conditions by restricting surface disturbance and preserving the natural ground cover of the WSA.

b. Wildlife

The designation of the entire WSA would permanently preserve 12,838 acres of upper Chihuahuan Desert wildlife habitat. The natural distribution and abundance of wildlife species would be maintained.

The impact of wilderness designation on wildlife management activities in the WSA would be low.

c. Visual

The scenic values of the WSA would be permanently preserved by wilderness designation.

d. Cultural

Effectively closing the WSA to vehicular entry would reduce the potential for the occurrence of serious or commercial vandalism of cultural sites within the area.

Wilderness designation would restrict but not disallow archeological stabilization, excavation, and research within the WSA. These activities could be authorized by the State Director in consultation with the State Historic Preservation Officer.

The inclusion of the WSA in the National Wilderness Preservation System would enhance the scientific and educational values of cultural sites within the area by preserving a relatively undisturbed environment from which the human ecology of the WSA during previous occupational periods could be more accurately reconstructed.

e. Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM.

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are

necessary to ranch operations. Virtually all ranching operations occurring within the WSA are presently conducted on horseback. If the area is designated wilderness, ranching operations would continue, with few exceptions, much as they have in the past.

f. Recreation

The WSA is capable of providing visitors with high quality, readily accessible primitive recreational experiences ranging from hiking, horseback riding, and backpacking to hunting. Wilderness designation would maintain the natural environment which makes these human activities possible in an undisturbed state.

Vehicular associated recreational activities would be prohibited. The WSA, although generally very rugged, could be (and is) used to a degree by off-road vehicles. However, numerous alternative areas exist for motorized recreational activities in the surrounding locale.

g. Other--Military

In the event of a missile impact, carefully controlled access to the area would limit the military's freedom of action in the area, but would not significantly impact the mission of White Sands Missile Range (WSMR).

If increased military activities in the WSMR Safety Extension Area require additional instrumentation sites, it is doubtful that they could be placed in the area under wilderness management. It is difficult to assess the impacts resulting from denying these sites, but it is assumed that other suitable locations could be found outside the area. For this reason, the impacts to WSMR would not be significant.

h. Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and the management of the area to maintain wilderness values would produce significant impacts to wilderness.

B. Amended Boundary

Under the Amended Boundary Alternative, 12,798 acres would be recommended suitable and 40 acres would be recommended nonsuitable for wilderness designation. The 40-acre deletion would provide an access corridor into a 160-acre private tract and spring. This would allow the private landowner to construct a vehicle access route into his property and develop the spring site.

Under this alternative, like the All Wilderness Alternative, existing vehicle routes and legal subdivision lines are utilized to identify the boundaries of the proposed wilderness.

Under the Amended Boundary Alternative, impacts to wilderness values would be significant. Impacts to air and education/research were

clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

The impacts to mineral resources would be the same as those described under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Wildlife

The construction of a vehicle access route to the privately-owned spring site presently used by wildlife, especially mule deer, could result in an increase in big game poaching activity, wildlife displacement, or a reduction in wildlife density.

b. Other Resources

Impacts to water, soils, vegetation, cultural resources, livestock grazing, visual resources, recreation, and the WSMR Safety Extension Area would be the same as those described under the All Wilderness Alternative.

c. Wilderness Values

Wilderness designation would provide long-term Congressional protection for 12,798 acres of the WSA. This protection would result in significant long-term impacts to the area's wilderness values.

The remaining 40 acres would not receive long-term Congressional protection. An access road to the 160-acre private inholding could be constructed across this 40 acres. This would not significantly reduce the visual quality or wilderness values of the remainder of the area because of the bad land topography.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 12,838 acres of public land within the Sierra de las Canas WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing, mineral exploration, and other traditional uses.

Two small open pit mines and nearly six miles of bladed access routes and four bladed drill pads are present north and west of the WSA. Although there is little likelihood the WSA possesses substantial mineralization, mining activities similar to those which occurred on lands west and north of the area could cause significant impacts to the wilderness values of the WSA. Present regulations prohibit undue and unnecessary degradation of lands but do allow environmental disturbance if it is an unavoidable consequence of mining activities.

Under this alternative, there could be significant long-term impacts to wilderness values. Impacts to air and education/research were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

Under this alternative, there could be a significant long-term reduction of the area's naturalness and other wilderness values.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Continued low levels of off-road vehicle (ORV) use could result in vehicle scars and rutting. If mineral exploration and development occurs, disturbance to soil and watershed values would result in increased water runoff and erosion.

b. Wildlife

A wider range of wildlife management actions would be allowed. If mineral exploration occurs and new roads are constructed, wildlife habitat values could be disturbed.

c. Visual

The WSA is considered to possess high scenic values. Under this alternative, the maintenance of these values could be impaired. Mineral exploration could degrade the scenic resource values of the WSA.

d. Cultural

The cultural values of the WSA could be impacted if ORV use occurs in the large arroyos accessible to vehicles and along which most cultural sites probably occur. However, because a majority of the WSA has not been inventoried, it is not possible to effectively assess the significance such disturbance may have on cultural values.

Vehicular access to cultural sites would routinely continue if the area is managed under this alternative. This would be beneficial to archaeological research, investigations, excavation, and stabilization projects.

e. Minerals

There would be no impacts to minerals and energy resources. Mineral activity would probably continue to occur at historical levels.

f. Livestock Grazing

There would be no impacts to livestock grazing.

g. Recreation

The primitive recreational values of the WSA would eventually be reduced under this alternative. The attractiveness of the WSA is dependent upon its near-pristine environment. Management actions in future years could alter the WSA's existing environment with the installation of rangeland development projects, vehicle access routes, and other intrusions.

New vehicle access routes within the WSA would open the WSA to motorized recreational activities. Deer hunting access would be improved and the scenic qualities of the WSA would potentially become available to a greater number of persons.

h. Other--Military

If nonwilderness management results in additional vehicle routes in the area, it would increase public access and complicate efforts to evacuate the area. Access to recover possible missile debris would still require careful coordination between BLM and White Sands Missile Range, but could be allowed with fewer limitations. Temporary tracking devices could be located in the area.

APPENDIX W

SIERRA LADRONES WSA (NM-020-016)

I. GENERAL DESCRIPTION

A. Location

The Sierra Ladrones (Mountain of Thieves) Wilderness Study Area (WSA) is located in Socorro County in west-central New Mexico. The WSA is situated 15 air miles northwest of the community of Socorro.

The U.S. Geological Survey (USGS) topographic map covering the WSA is the Riley, New Mexico quadrangle at the 15-minute scale.

B. Climate and Topography

The climate of the WSA is characteristic of southwestern desert mountains. Considerable variation in temperature and precipitation is present within the WSA. Maximum summer temperatures in the lower elevations surrounding the mountain peaks range from 90° to 100°F. In contrast, temperatures in the higher elevations typically are 10° to 15° cooler, ranging from 75° to 90°F. Winter daytime temperatures tend to be mild on low elevation lands, 35° to 50°F. In the higher elevations, diurnal temperatures range from 20° to 40°F with nighttime lows atop the peaks often falling well below zero. Spring and fall temperatures tend to be mild.

Precipitation, like air temperature, is strongly influenced by elevation. Generally, average annual precipitation increases along with elevation increases. Because of the cloud gathering effect of the mountains, low elevation lands surrounding the WSA tend to receive more precipitation than nearby lands of similar elevation; 12 inches per year as opposed to 10 inches. Correspondingly, the highest elevations in the WSA receive a projected average of 16 to 20 inches of precipitation per year.

Over half the area's annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The Sierra Ladrones WSA rises precipitously out of the Rio Grande Valley on the east and from mesa grassland and pinyon-juniper woodland on the north, west, and south. Elevations range from 5,200 feet to 9,176 feet with a maximum relief of 3,976 feet.

The WSA is 14 miles long from north to south and 8 miles wide east to west. The core peaks of the range are extremely rugged. The northern end of the WSA terminates with abrupt escarpments which give way to several large canyons. The southern end of the WSA gradually loses altitude from the main peaks with a long narrow ridge eventually tapering down to box canyons and arroyos along the Rio Salado. On the east, the mountains break

into a series of rocky canyons which give this exposure the appearance of an enormous pile of boulders. The western and southern portions of the WSA are characterized by rocky cliffs, mesa rimrock, badlands, and steep slopes cut by numerous box canyons and ravines.

C. Land Status

The Socorro District Wilderness Draft Environmental Assessment (DEA) (BLM 1983) identified the WSA as having 39,308 acres of public land, 1,960 acres of state inholdings, and 373 acres of private inholdings. These acreage figures were based on the decisions contained in the New Mexico Study Area Decisions (BLM 1980). These decisions were contested and appealed to the Interior Board of Land Appeals (IBLA). The IBLA recently completed their review of appeals of the November 1980 decisions. The IBLA reversed BLM's decision to delete approximately 6,000 acres south of the Rio Salado from the WSA and directed BLM to add this acreage to the designated WSA.

During the reinventory, the BLM determined that the additional 6,000 acres were divided into two parcels by the Carbon Springs Road.

The east parcel is made up of 3,240 acres of public land, 800 acres of private land, and 211 acres of split estate. This parcel is contiguous with the original WSA.

The west parcel is made up of 1,200 acres of public land, 40 acres of private land, and 767 acres of split estate.

Because of the location of the split estate lands in the west parcel, only the 140 acres in T. 2 N., R. 3 W., Section 29, that are southwest of the Rio Salado are contiguous with the original WSA.

The WSA now contains the original WSA acreage, the public land contained in the east parcel, and the 140 acres in T. 2 N., R. 3 W., Section 29, that is southwest of the Rio Salado.

The total WSA now includes 42,688 acres of public land, 373 acres of private inholdings, and 1,960 acres of state inholdings. (See Map 23 for land status within the WSA.)

D. Access

Primary legal access to the WSA is provided by Interstate 25 at Bernardo and then west via County Road 12. Legal access is also provided by U.S. Highway 60 at Magdalena and then north via County Road 67.

SIERRA LADRONES WSA

(NM 020-016)

MAP 23

Legend

— WSA BOUNDARY

- - - AMENDED BOUNDARY

⋯ LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

Land Status*

BLM

P PRIVATE

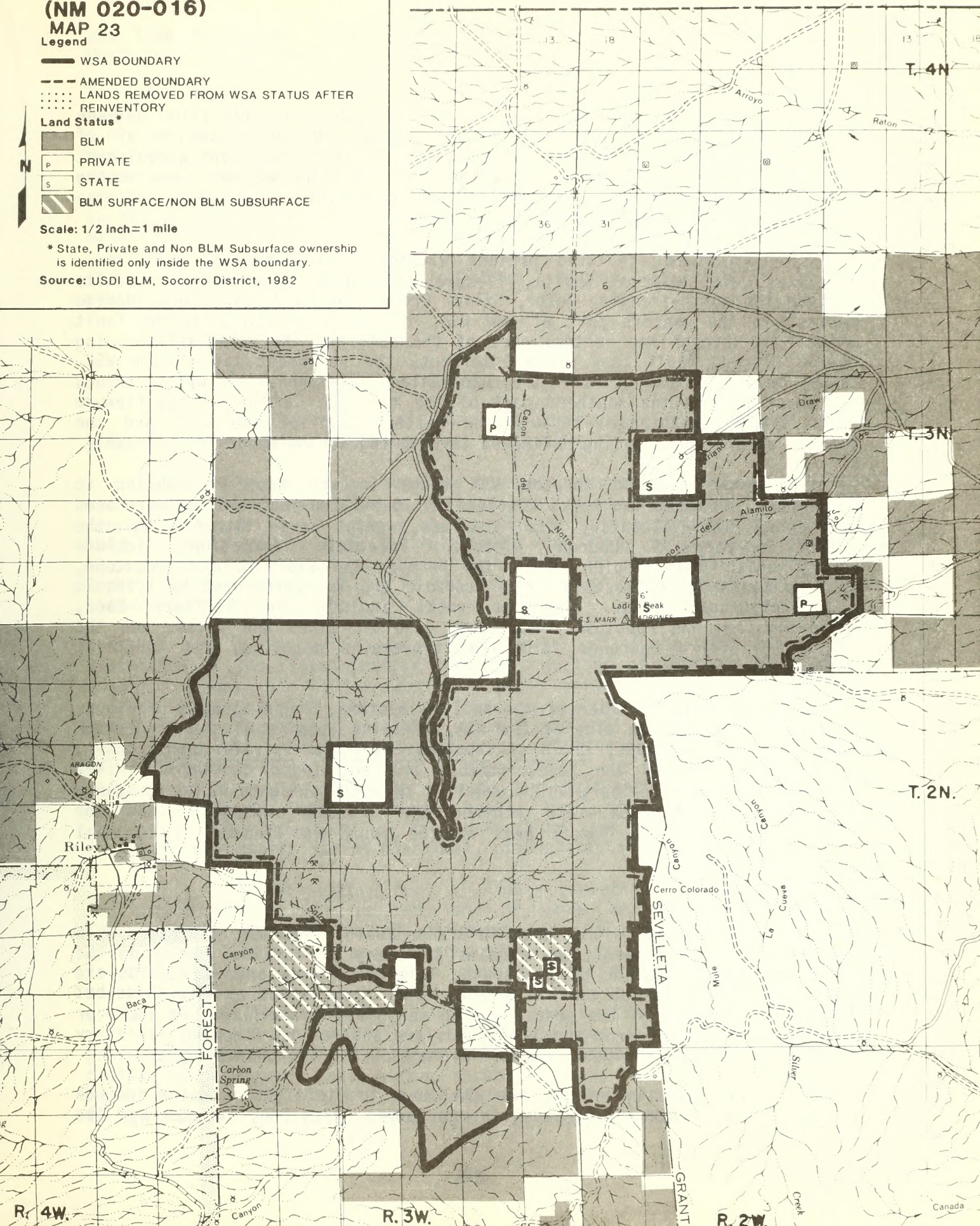
S STATE

BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982



II. EXISTING RESOURCES

A. Geology and Paleontology

The Sierra Ladrone WSA lies across a zone of transition between the northwestern flank of the Rio Grande Rift and the southeastern margin of the Colorado Plateau. The Ladrone Mountains appear to represent a resistant prong of the Colorado Plateau block that juts into the western side of the Rift. The WSA is also located on the northeastern periphery of the Datil-Mogollon volcanic field.

Structural features present within the WSA include anticlines, synclines, and numerous faults, flexure, and shear zones. Major faults include the north-trending Jeter, Silver Creek, and La Jencia Creek "domino faults" in the eastern part of the WSA, the north-trending Ladrone fault which runs through the central part of the WSA, and the northeast-trending Cerro Colorado fault zone which intersects the southeast tip of the WSA. Other major structures are the Rio Salado flexure zone which trends northwest through the southern part of the WSA, the Carbon Springs flexure which trends north-south through the western part of the WSA, and the Alamito shear zone trending northeast through the northern part of the WSA.

Rocks exposed in the WSA range in age from Precambrian to Quaternary. Precambrian rocks consist of 1.6-billion-year-old metamorphosed sediments, meta-volcanics, and granites, which are intruded by the 1.3-billion-year-old Ladrone pluton. Paleozoic formations include Pennsylvanian-Mississippian rocks, the Permian Abo and Glorieta sandstone, and the San Andres limestone. The Mesozoic era is represented by Triassic and Cretaceous rocks. Cenozoic rocks include the Tertiary Baca, Datil-Mogollon and Popotosa formations, basaltic dikes and sills, and the Quaternary Sierra Ladrone formation, travertine deposits, and surficial deposits.

The Caloso member of the Kelly limestone, found along a prominent hogback on the western side of the WSA, contains fossils of the Kinderhook fauna. Two brachiopods, Dielasma chouteauvensis and Spirifer centronatus, which are common in the Caloso member are not found elsewhere in New Mexico. The Ladrone member, which overlies the Caloso, contains an abundance of corals, brachiopods, and echinoderms. Further discussion of the significance of these fossil beds can be found in Chapter IV, Special Features.

B. Water

The WSA lies within the Rio Grande Basin. The WSA is drained by a radial pattern of intermittent streams tributary to the Rio Puerco on the north and the Rio Salado on the south. The Rio Puerco and Rio Salado are important tributaries of the Rio Grande. Each have extensive watersheds but are dry during much of the year. During periods of significant rainfall or snow melt, the Rio Puerco and Rio Salado are subject to flooding and carry large quantities of sediment. Runoff averages 0.1-0.5 inches per year.

Formations underlying the WSA known to yield ground water include Precambrian age rocks, Pennsylvanian age Madera limestone, Permian age Abo

and Yeso formations, Tertiary age Popotosa and Santa Fe formations, and Quaternary age alluvium.

C. Soils

Development of typical soil horizons is seldom found within the WSA. Soils are usually thin and rocky, with gravelly loams and sandy loams underlain by granite bedrock. The only areas with appreciable soil depth occur in the lower canyon bottoms, valleys, portions of the mesa benchland on the west, and along the Rio Salado. Rock outcrops, some of which are massive, cover approximately 40 percent of the land surface of the mountain core area. Soil parent materials are composed predominantly of sandstone, shale, granite, basalt, and limestone. Gypsum is present in the southwestern portion of the WSA.

D. Vegetation

1. General

The Sierra Ladrones WSA includes four major vegetation types: pinyon-juniper, desert shrub, conifer, and bosque.

The pinyon-juniper type covers approximately 89 percent of the WSA. The overstory is dominated by one-seed juniper and pinyon pine. The percent composition of juniper and pinyon in this vegetation type varies from less than 1 percent in the relatively flat areas to the north and west to more than 15 percent on the steep slopes in the center of the WSA. Gambel oak may also be found in the overstory on the steep slopes in the center of the WSA.

In the relatively flat areas at lower elevations, the understory of the pinyon-juniper type is comprised of numerous warm-season grasses, shrubs, and half-shrubs, and a few perennial forbs. The average percent composition of grasses in these areas is 84 percent. The most common grasses are black and blue grama, sand and spike dropseed, alkali sacaton, galleta, ring muhly, burrograss, fluffgrass, and threeawn. The most dominant shrub or half-shrub in these areas, and probably in the entire WSA, is broom snakeweed. Other shrubs and half-shrubs include creosote, fourwing saltbush, feather peabush, cholla, and prickly pear. Some of the perennial forbs present in the understory are prickly-leaf dogweed, ironplant goldenweed, plains blackfoot, plains zinnia, and aster.

On the steep slopes at higher elevations, the understory of the pinyon-juniper type is comprised of warm- and cool-season grasses. There are also more shrubs and half-shrubs in the understory at the higher elevations. The average percent composition of grasses is only 72 percent in these areas. The warm-season grasses include black and blue grama, sideoats grama, hairy grama, sand dropseed, and galleta. The cool-season grasses include Arizona fescue, mountain brome, mutton bluegrass, Junegrass, wolftail, bottlebrush squirreltail, and needlegrass. Shrubs and half-shrubs present at the higher elevations are broom snakeweed, feather peabush, cholla, prickly pear, datil yucca, shrub live oak, hairy mountain mahogany, skunkbush sumac, Apacheplume, and beargrass. Few perennial forbs are found in the understory of the pinyon-juniper type at the higher elevations.

The desert shrub type covers less than 5 percent of the WSA, and is located in the extreme northern end of the area. The overstory is dominated by cholla. The understory is dominated by perennial grasses such as black and blue grama, sand and spike dropseed, galleta, ring muhly, burrograss, fluffgrass, and threeawn. The major shrub or half-shrub present in the understory is broom snakeweed. The major perennial forb is globemallow.

The conifer type also covers less than 5 percent of the WSA. This type is restricted to the upper ends of the main canyons, such as Canon del Alamito and Canon del Norte. The overstory is dominated by ponderosa pine with some Douglas fir and aspen present in isolated spots. The understory is similar to that found in the pinyon-juniper type at the higher elevations.

Less than 5 percent of the WSA is occupied by the bosque type, which occurs in the broader swales and drainages and is dominated by salt cedar. Other species include inland saltgrass, alkali sacaton, giant sacaton, spike dropseed, and giant dropseed.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of 10 Federally-listed and 11 state-listed species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

The Sierra Ladrones WSA supports approximately 201 wildlife species, comprised of 51 reptile and amphibian species, 56 mammal species, and 94 resident and migratory bird species. A complete list of wildlife species for the Sierra Ladrones WSA is available for review at the Socorro Resource Area Office.

Mule deer and cougar are the only big game species that occur in the WSA's mountainous core. Pronghorn have been observed on the western mesa benchland and in the southern portion of the WSA. In the past, the mountain core of the WSA supported a moderate deer population that has since been depleted. Several factors could be responsible for the decline, some of which are disease, overharvest, poaching, predator loss, and drought. Abundant food is available and water sources, while not abundant, are believed adequate.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Badgers, desert cottontails, black-tailed jackrabbits, white-throated woodrats, deermice, ground squirrels, and several species of bats also occur in the WSA.

The massive rock escarpments, canyons, and rock outcrops should be attractive to birds of prey. However, raptor density appears to be low. Birds which are commonly sighted in the WSA include horned larks,

pinyon jays, western bluebirds, ravens, mourning dove, and Gambels and scaled quail.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

The Sierra Ladrone WSA contains two wildlife standard habitat sites (SHS's). These SHS's are described briefly below.

Pinyon-Juniper Woodlands

This SHS is found throughout the WSA in the higher elevations, with the best stands growing on sandy limestone hills, basalt hills, malpais, and loamy range sites. Small scattered stands of one-seed junipers are found around 6,000 feet on north-facing slopes. As the elevation increases, pinyon becomes more and more dominant until in the higher elevations, it is the dominant tree with alligator juniper and oaks being the subdominant trees. Diversity of nongame species is high in this SHS.

Mixed Shrub Grass Hill

This is a diverse SHS with habitat sites scattered throughout the WSA. These sites are adjacent or between pinyon-juniper woodlands. The habitat sites offer little cover for most wildlife species. Most shrubs are found in a sandier soil, on the north side of the hills, or along small arroyos or gullies. Grasses are the principal ground cover with black grama and galleta being the most common.

2. Threatened or Endangered Fauna Species

There are no known threatened or endangered species in the WSA. The area is currently being considered as a potential reintroduction site for the desert bighorn sheep, which is a New Mexico state endangered species.

F. Visual

The WSA is dominated by the granitic core of the Sierra Ladrone. The dramatic uplift of the mountain range, especially when viewed from the north, is inherently scenic. The panoramic view from the top of Ladrone Mountain can be spectacular, especially during the morning or evening hours.

The WSA's greatest scenic asset, however, is its landscape diversity which ranges from a spectacular mountain core to mesa grasslands, box canyons, rimrock, badlands, desert, and the floodplain of the Rio Salado.

The WSA is visible from a distance of nearly 100 miles in some directions. The Sierra Ladrone stand as one of New Mexico's outstanding visual landmarks.

G. Cultural

A Special Project Cultural Resources Inventory (Class I) for the Sierra Ladrone WSA was completed by BLM in 1981. The cultural resource

information compiled was based upon a comprehensive literature and records search. The following data were extracted from this report and historical documents. The full text of the report is available for review at the Socorro Resource Area Office.

The WSA is unusually rich in cultural resources, both historic and prehistoric. Although less than 3 percent of the WSA has been intensively inventoried, 18 sites have been recorded within the area. Recorded sites range from possible paleo/archaic lithic scatters to historic structures from the 1930's.

The name "Mountain of Thieves" is derived from use of the Sierra Ladrones, apparently by both Navajo and Apache bands, as a stronghold to raid Spanish and later Mexican and American settlements along the Rio Grande as far north as Albuquerque in the seventeenth, eighteenth, and nineteenth centuries. Although the Indians undoubtedly viewed their raids from a different perspective, to the Spanish and later Mexican and American colonists, the removal of livestock from ranches constituted depredations by "thieves". Since the Navajo and Apache themselves usually viewed these raids as primarily "economic" in nature, a form of tribute for past injustices as opposed to warfare, the Spanish name for the Sierra Ladrones becomes understandable.

Warfare between the Spanish, Mexicans, and Americans and the Indians took place in the Sierra Ladrones; however, documentation is very scarce. It is known the last U.S. Cavalry-Apache engagement within the southern portion of the WSA occurred in 1881. The combatants were Company K of the 9th U.S. Cavalry Regiment commanded by Colonel Parker and a small band of Warm Springs Apache under Nana. Parker's command was but a small contingent of a much larger U.S. military force which was pursuing Nana and his warriors, which numbered no more than 30 men. However, Nana ambushed Parker and his men in the Salado Box, killing three soldiers and wounding a number of others. There were no Apache casualties.

Nana's engagement with Colonel Parker in the Salado Box is but an example of the history of the Sierra Ladrones WSA. Legends of Conquistadors, buried Civil War cannons, lost treasure, lost bandit gold, lost mines, desperado hideouts, as well as stories of more recent moonshine-still hideaways abound in the WSA. Given its geographic proximity to the Rio Grande Valley and New Mexico population centers on the one hand and its isolation and ruggedness on the other, these stories have been encouraged and given some credibility by the environment of the area. But like Nana's raid, which is history, a number of the legends probably have some historical basis.

The prehistoric cultural resources of the WSA are more significant, especially from a scientific standpoint, than are its historic resources. Most of the known cultural sites within the WSA are prehistoric, and it is anticipated further inventory will broaden the gap in favor of prehistoric sites even further.

Existing data indicate the WSA has been utilized by humans for at least the past 10,000 years. Further, since recent data suggest paleo-Indian sites are likely to be found in high diversity mountain

environments such as the core mountain area of the WSA, it is likely the WSA possesses cultural resources which extend even further into the past. Due to the WSA's pivotal geographic location, atypical prehistoric cultural resources (especially for the Mogollon-Anasazi cultures) are anticipated from this area.

H. Air

Generally, the quality of air within the Sierra Ladrones WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Six post-Federal Land Policy and Management Act (FLPMA) noncompetitive oil and gas leases have been issued or are pending within the WSA. No exploration or development for oil and gas has occurred in the WSA to date.

The southwestern portion (approximately 3,000 acres) of the WSA is considered to have potential for the discovery of oil and gas. The New Mexico Bureau of Mines and Mineral Resources has determined that this portion of the WSA has a Class III rating, in a system in which Class I is most favorable and Class IV is least favorable for discovery of oil and gas. Available information indicates a high probability for the generation of petroleum and natural gas in Pennsylvanian rocks under this portion of the WSA, but the existence of traps and reservoirs has not been proven. The probability for discovery of oil and gas reservoirs is judged to be moderate to low. The rest of the WSA is not considered favorable for the discovery of oil and gas.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA. The east flank of the WSA overlies the western flank of a deep sill-like magma body, and seismic information indicates magma intrusion at a depth of about 5 kilometers below the northeastern portion of the WSA. Deep geothermal reservoirs of this nature have not yet produced commercial energy, and would test the limits of current technology. The probability for discovery of a commercial geothermal energy source within the WSA is judged to be low.

c. Carbon Dioxide

There has been no activity associated with the exploration or development of carbon dioxide within the WSA. The conditions which form deposits of carbon dioxide are not well understood, but are believed to be related to thermal action when limestones are intruded by igneous rocks. If this theory is correct, the WSA may have potential for carbon dioxide production. Small igneous bodies are known to occur in the western part of the WSA, and probably cut the Madera limestone in the subsurface; but only minor amounts of thermal action are likely. The probability for discovery of commercial volumes of carbon dioxide is judged to be very low.

d. Coal

There has not been any coal related activity within the WSA, but minor coal production has occurred several miles south and east of the WSA prior to 1940. The coal beds are generally less than a foot thick, have very little lateral extent, are generally poor in quality, and do not

extend into the WSA. It has been suggested (Chapin et al. 1979) that this minor coal resource could be used to fire a cement plant using locally available travertine, gypsum, shale, and water.

2. Locatable

At present, there are approximately 89 mining claims located within the WSA. The claims are staked on occurrences of manganese, uranium, copper, silver, barite, and gypsum. Of these claims, only one predates the enactment of FLPMA. The WSA has potential for the occurrence of the following locatable minerals:

a. Supergene Uranium/Copper

During the mid-1950's, approximately 6,000 tons of uranium ore were produced from the Jeter deposit located approximately 1/4 mile from the east boundary of the WSA. Occurrences of secondary copper minerals associated with uranium minerals have been verified along a 5-mile long section of the Jeter fault. The area has been prospected by means of shallow surface excavations and drilling during the mid-1950's and early-1970's, but the depressed condition of the uranium market in recent years has precluded additional exploration or development. The probability for the discovery of additional small deposits is considered to be very high, and the probability for discovery of large, commercially significant deposits is judged to be moderate.

b. Stratiform Copper Sulfide/Uranium

There are indications that the Precambrian metamorphic rocks in the mountainous core of the WSA may contain significant deposits of copper sulfide and uranium minerals, possibly associated with cobalt and nickel which are both strategic metals. Copper occurrences are reported to be scattered throughout the metamorphic terrain, and evidence implies that mineralization occurring along the Jeter fault is a result of metals being leached from the metamorphic rocks and redeposited along the fault. Analysis of samples from a prospect in metamorphic rocks, and trace element analysis of the Jeter ore body tend to support this theory. The probability for discovery of commercial deposits of this type is considered to be high.

c. Silver/Base Metal/Barite Veins

Numerous northwestern- and northeastern-trending fractures in Precambrian rocks on the northeastern flank of the Ladrone Mountains are occupied by a complex network of siliceous and carbonate veins. Siliceous veins are known to contain minor amounts of lead-zinc-copper sulfides, moderate amounts of barite, economic concentrations of silver and subeconomic gold values. Carbonate veins carry economic grades of silver and some barite. The veins are mostly thin, discontinuous, and probably die out with depth. In addition, veins of mineable width and grade do not occur at the surface. For these reasons, the veins are considered to be noncommercial, and have no economic potential.

d. Lead/Zinc/Barite in Paleozoic Limestones

An area favorable for Mississippi valley-type lead-zinc-barite deposits in limestone has been tentatively outlined on the basis of hydrothermally silicified limestones and silicified fault breccia along the Ladron fault, about 1 mile west of Ladron Peak. These silicified zones are mostly barren of mineralization at the surface, but may be associated with Mississippi Valley-type replacement deposits at depth. The probability for the discovery of such deposits is judged to be fair to poor.

e. Manganese

Two areas favorable for the discovery of manganese deposits have been identified within the WSA. One area represents a swath along the Carbon Springs fault zone where it is covered by a travertine cap rock. The Black Mask mine, which produced 566 metric tons of ore during 1952-55, is located in this area. This swath is considered to have high probability for discovery of similar small, high-grade bodies of ore, but low probability for discovery of large, commercially significant deposits.

The second area, located in the south-central portion of the WSA, represents the shallow subsurface and above surface projection of a late Cenozoic unconformity where the upper Madera limestone is overlain by limestone-cobble conglomerate of the Sierra Ladrones formation. Deposits adjacent to this unconformity have produced very minor amounts of low-grade manganese. It is likely that similar deposits could be found in the area, but they would be of too low a grade to be profitably mined, and are not considered to be an economical resource.

f. High Calcium Limestone

The travertine caprock in the northwestern portion of the WSA, and the Madera limestone in the central portion of the WSA, represent a large reserve of cement and chemical grade lime. The travertine deposit totals approximately 225 million metric tons of which 150 million tons falls within the WSA, and the Madera limestone is estimated to total 25-50 million metric tons within the WSA. The principal obstacle to development of these deposits is transportation. The nearest rail head is 20 miles away, and roads in the area are generally poor. However, if the population in central New Mexico continues to grow, there may be sufficient demand for cement to exploit this resource. It has been suggested (Chapin et al. 1979) that coal from the Riley-Puertecito area could be used to fire a cement plant in the vicinity of Riley, utilizing locally derived limestone as raw material.

g. Gypsum

Within and adjacent to the WSA, gypsum beds crop out near the top of the Yeso formation and near the base of the Glorieta sandstone. It has been estimated that 194,000 metric tons of near-surface gypsum deposits occur within the WSA. However, this gypsum is remote from principal construction markets and has poor access. Mining is unfavorable because of thick overburden, interbedded clastic and carbonate units, and structural complexity.

h. Gold

Bedrock unconformities mantled by river or shoreline conglomerates are well known sites for discovery of placer gold deposits. Thin quartz pebble conglomerates containing subeconomic concentrations of gold are known to occur at the base of the Kelly formation where it rests unconformably on Precambrian rocks near Cerro Colorado. Based on this information, the economic potential of placer gold deposits in the WSA is judged to be low.

i. Tungsten/Bismuth/Fluorite

There is a possibility that deposits of tungsten-bismuth-fluorite exist within the WSA. Samples taken from a plug-like body of coarse grained granite contained minor amounts of fluorite. In addition, stream sediments emanating from this area southwest of Ladrone Peak contain anomalous values of tungsten and bismuth. This information suggests that a greisen or vein-type tungsten-bismuth-tin deposit is possible within the area. This potential is highly speculative, and the favorable area needs additional study to verify this possibility.

3. Saleable

No material sales have been conducted within the WSA, and no future sales are anticipated. The WSA contains deposits of limestone, suitable for crushed stone, and may contain some deposits of sand and gravel. However, poor access, distance to markets, and the existence of more readily available materials in other areas probably precludes the development of saleable materials within the WSA.

B. Watershed

The southern two-thirds of the WSA is located in the Rio Salado Watershed and the northern third in the Rio Puerco Watershed. Both watersheds in the WSA are characterized by thin, rocky, well-drained soils with sandy gravelly loam textures underlain by granite. The area south of the Rio Salado is in the Cerro Colorado Watershed and is characterized by deep, well-drained and gravelly soils.

The Rio Salado and Rio Puerco have extensive watersheds but are dry during most of the year. Due to the thin rocky soil, there is rapid runoff and little ground water storage. Erosion currently is light to moderate but the potential for accelerated erosion is high. There are no erosion control projects in the WSA.

There are two wells within the WSA. Numerous springs and seeps also occur in the area. Four springs have been developed, three on the northern side and one on the western side of the WSA. Ground water in two wells located just outside the WSA boundary is representative of the WSA. Analysis of ground water samples taken from these wells indicates high dissolved solids and marginal limits of gross alpha natural uranium, but the water is suitable for livestock watering purposes. Two springs within the WSA also have some gross alpha natural uranium, but levels are not harmful for livestock purposes.

C. Livestock Grazing

1. Allotments

One grazing allotment and parts of eight other grazing allotments lie within the Sierra Ladrones WSA. All nine allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Cerro Colorado	1,376	144	1,376	100%
Ojo Saladito	11,291	1,562	3,070	27%
Monte Negro	4,764	480	2,400	50%
North Ladron	7,309	1,464	4,000	54%
Riley Community	2,592	252	156	6%
La Jencia	18,044	1,992	10,420	58%
West Ladron	24,990	2,460	17,243	69%
Ladron Peak	3,905	444	3,300	
Rio Salado West	7,231	756	723	10%
TOTAL			42,688	

2. Ranch Management

Permittees periodically inspect and maintain as necessary most rangeland developments using motor vehicles. Fence inspection and maintenance is sometimes performed on horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Cerro Colorado	1 mile fence
Ojo Saladito	1 dirt tank 2 1/2 miles fence 2 4/10 miles access routes
Riley Community	1 1/2 miles fence
La Jencia	19 miles fence 2 spring developments 2 miles pipeline with 4 drinking troughs 7 dirt tanks 18 miles access routes
West Ladron	22 miles fence 1 spring development 8 1/2 miles pipeline 6 drinking troughs 5 dirt tanks 1 windmill 15 miles access routes
Rio Salado	1 dirt tank
North Ladron	2 miles pipeline 1 drinking trough 2 miles fence
Ladron Peak	2 1/2 miles fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned within the WSA at this time.

D. Timber Harvest

Approximately 90 percent (38,800 acres) of the Sierra Ladrones WSA is classified as nonproductive forest land (New Mexico Forest Inventory 1975). One-seed juniper is the dominant tree species with pinyon pine representing only a minor component. Scattered stands of ponderosa pine are found within drainages at the higher elevations. The higher elevations also include some Douglas fir and aspen.

Information on stand parameters has never been collected, but certain generalizations can be made from field observations. The stunted nature of the vast majority of juniper is indicative of a very low site quality. Wide tree spacing and the estimated 5 percent crown closure result in a low level of stocking that precludes economic harvesting of the woodland resource. Poor conformation, inherent in understocked stands, also limits the usefulness of the product. Age class is unknown but is certain to be unbalanced due to the preponderance of overmature individuals and a lack of regeneration.

The potential for saw timber production on a sustained yield basis does not exist within the WSA. Production of posts and poles is probably of marginal value due to the poor conformation of the juniper. At present, fuelwood production is considered marginal due to the lack of physical access to the majority of forested lands and the availability of alternate cutting areas (i.e., Forest Service administered land).

E. Recreation

Recreational use of the WSA is moderate. Existing recreational activities in the WSA include day hiking, horseback riding, backpacking, technical rock climbing, natural history activities (e.g., birdwatching), environmental exploration, rockhounding, hunting, and photography. Off-road vehicle use is confined primarily to the Rio Salado and larger arroyos.

Although water is scarce in the WSA, this has not hindered backcountry use and is not expected to do so in the future for those accustomed to or appreciative of desert mountain recreational activities. However, the lack of water within the range is expected to hold this type of use by the public to moderate levels.

Peripheral use (i.e., automobile touring) and short day hikes along the WSA's northern and western peripheries, can be expected to increase due to ease of access and proximity to Socorro, Belen, and Albuquerque, New Mexico.

F. Education/Research

Although the Sierra Ladrones have been the subject of studies and research by the New Mexico Bureau of Mines and New Mexico Institute of Mining and Technology, the WSA is not currently utilized for any known educational or research purpose. Environmental education and research potential for the WSA, however, is considered significant for cultural, natural ecosystem, paleontological, and geologic studies.

G. Wildlife

The New Mexico Department of Game and Fish (NMDGF) has identified the WSA and adjacent Sevilleta National Wildlife Refuge lands as possessing high potential for the reintroduction of desert bighorn sheep. Habitat conditions are deemed excellent with the possible exception of the need to improve water sources within the mountain range.

A wildlife Habitat Management Plan (HMP) has been developed for the Sierra Ladrones in cooperation with the NMDGF. It is designed to improve and maintain habitat for mule deer, upland game, and nongame wildlife species, and to determine the feasibility of reestablishing desert bighorn sheep into the habitat area. The objectives of the plan are to create additional water sources and to produce more forage for wildlife. Actions proposed in the plan include construction of 3 wildlife waters, maintenance of 7 existing pipeline wildlife watering facilities, development of 8 springs, and fencing portions of 6 existing earthen reservoirs. When implemented, these actions would increase the potential of the area as wildlife habitat.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Sierra Ladrones WSA generally appears natural. The eastern mountain core and southwestern corner of the WSA are highly natural in appearance and affected primarily by the forces of nature. The naturalness of the WSA is further enhanced by its dramatic topographic relief, diversity of landforms, and relatively large size.

The WSA is impacted by vehicle routes which vary from jeep trails to two-track ranch access routes. Approximately 2 1/2 miles of a bladed road which provides access to a windmill and large water storage tank has been cherry-stemmed out of the WSA. Other intrusions consist of numerous rangeland development structures. Rangeland developments are concentrated on the northwest shoulder of the WSA. These developments include fences, dirt tanks, developed springs, pipelines, drinking troughs, and access routes. The generally high quality of naturalness in the WSA is reduced in this area of more intensive grazing management.

Seventeen mining prospects and six old mines are also present in the WSA. These are, for the most part, historic mining impacts which are relatively small in size and unobtrusive in appearance. No active mining is taking place in the WSA at present.

Although human intrusions are present in the mountain core and in the southwestern corner of the WSA, the rugged topography moderates the significance of these intrusions to a considerable degree. In all cases, they are substantially unnoticeable in the area as a whole.

b. Solitude

The Sierra Ladrones WSA is a rugged range of unusual topographic diversity. Its high mountain peaks, isolated canyons, and inaccessible badlands provide the visitor with outstanding solitude opportunities.

c. Primitive and Unconfined Recreation

The WSA provides visitors with outstanding primitive recreational opportunities for day hiking, backpacking, technical rock climbing, horseback riding, photography, nature study, and environmental exploration. The proximity and ease of access of the WSA to Albuquerque, Belen, and Socorro, New Mexico, further enhance the value of these opportunities to the general public.

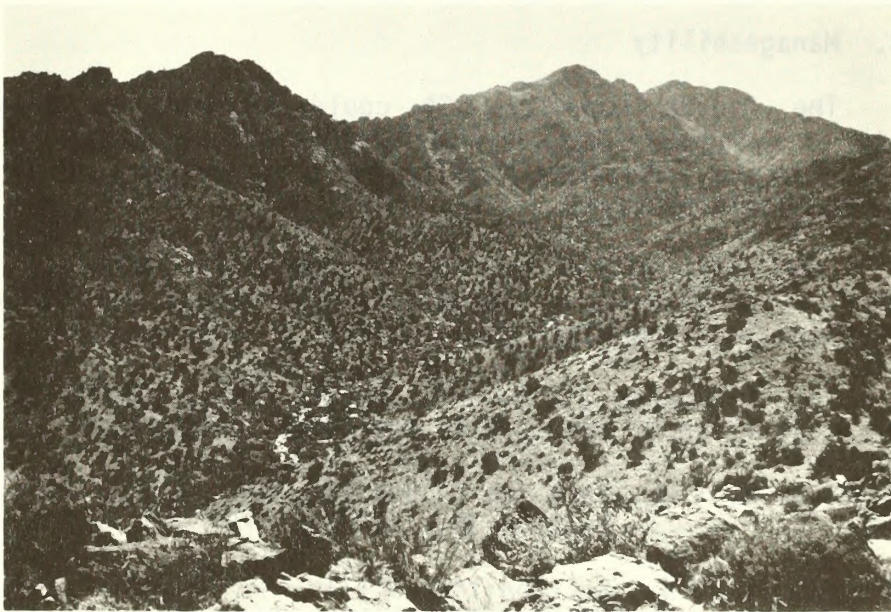
The WSA is also recreationally important because it is well suited to fall, winter, and spring use. It is during these seasons the WSA is most attractive for recreational pursuits.

2. Special Features

The Sierra Ladrones WSA contains the northernmost known exposures of lower Mississippian rocks in New Mexico. Exposures of these rocks in west-central New Mexico are limited largely to the Magdalena, Lemitar, and Ladrone Mountains. From a regional viewpoint, the Mississippian strata of this region fill a gap between those of southern New Mexico, described by Ladron and Bowsher (1949), and those of northern New Mexico, described by Armstrong (1955). The exposures are of special interest to those wanting to become familiar with the lithology and paleontology of the Mississippian. In the Sierra Ladrones, these rocks are well exposed and abundant in fossils. The excellent descriptions and illustrations of these rocks and fossils by Armstrong make the area valuable for educational purposes.

The scenic values of the Sierra Ladrones WSA are significant both when viewed from a distance (e.g., Interstate 25) and from within the WSA proper. The range of topographic relief and the landform diversity within the WSA create a southwestern scenic resource of considerable importance.

The ecological values of the WSA are also high. The WSA lies near the junction of two major ecoregions and includes such a wide range of landform and life zone diversity that the ecological resources of the area can be considered scientifically valuable.



View of Ladrone Peak.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Sierra Ladrones WSA as being within the Colorado Plateau Province and the Upper Gila Mountains Forest Province. The potential natural vegetation is 37,820 acres of juniper-pinyon woodland, 2,000 acres of pine Douglas fir forest, and 2,868 acres of grama-galleta steppe.

b. Distance from Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located within less than 5 hours driving time of the WSA. Albuquerque, New Mexico lies within 2 hours, Las Cruces, New Mexico within 4 hours, and El Paso, Texas within 5 hours driving time of the WSA.

B. Manageability

The Sierra Ladrones WSA could be managed as wilderness. Manageability is a judgment made by the BLM after considering such factors as private and state inholdings, valid existing rights, topography, and overall land ownership patterns.

Inholdings within the WSA include 1,960 acres of state land and 373 acres of private land. Acquisition of these inholdings, through voluntary exchange, would enhance manageability.

The following state and private lands should have a high priority for acquisition if the area is designated wilderness:

T. 3 N., R. 2 W., Sections 20 and 32: All
Section 34: SE1/4

T. 3 N., R. 3 W., Section 14: SE1/4
Section 36: All

T. 2 N., R. 3 W., Section 34: SW1/4
Section 36: NW1/4 SE1/4 and SE1/4 SW1/4

T. 3 W., R. 2 W., Sections 2 and 12: north of the Rio Salado

Grandfathered livestock operations in the WSA are compatible with wilderness management. Necessary vehicle access for maintenance of existing rangeland developments could be allowed under wilderness management.

Reasonable access is also guaranteed to state and private inholdings. These access needs are not expected to result in significant management problems. Existing off-road vehicle use is confined primarily to the Rio Salado and the larger arroyos which drain into the Rio Salado. Restricting access on these arroyos would be a management concern. Management could include constructing a fence across the Rio Salado, public education, and close management attention. The potential for controlling vehicular access in the eastern and northern portions of the WSA is excellent.

The majority of mining claims within the WSA are clustered in the northeastern portion of the area. The impact these claims may have on wilderness management is difficult to predict at this time. No mining activity of consequence has occurred in the WSA in the past 20 years. Although a Mining Plan was filed with BLM in 1980 for initiating mineral exploration on one claim, no further action has been taken by the claimant.

Six oil and gas leases have been issued or are pending within the WSA; all are subject to the wilderness protection stipulations.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has generally indicated strong support for designation of a Sierra Ladrones Wilderness Area or an alternative designation including primitive area status. This support has a history dating at least to the late-60's. Although the support tends to be centered in Albuquerque and Santa Fe, New Mexico, it is statewide in scope.

There was also public support for a WSA larger than that which was selected by the BLM in the New Mexico Wilderness Study Area Decisions, March 1980. This resulted in a successful appeal to the Interior Board of Land Appeals (IBLA). The IBLA decision added approximately 3,380 acres of land south of the Rio Salado to the Sierra Ladrones WSA. These additional lands have been evaluated and are included in this report.

The most commonly cited reasons in support of wilderness designation included the WSA's outstanding solitude and natural values, its recreation potential, and proximity to Albuquerque, Belen, and Socorro, New Mexico, combined with high scenic, wildlife, and ecological values.

Opposition to wilderness designation has been intense from local mining interests who feel designation would adversely impact mineral prospecting and development. Most area grazing permittees are also opposed to wilderness designation. They feel designation would adversely affect livestock operations on those portions of their respective allotments located within the WSA.

Twenty-seven letters were received during the public comment period on the draft version of this report. Twenty-one respondents favored wilderness designation for Sierra Ladrones, four were opposed, and two provided information but neither favored or opposed designation. Supporters of wilderness designation cited the WSA's wilderness values, which are felt to be of such high quality that the area is one of the best BLM wilderness candidates in the state. These values are further enhanced by the WSA's location adjacent to the Sevilleta Land Grant, which is managed as a natural area and wildlife refuge. Eighteen of the respondents also suggested enlarging the suitable recommendation to include additional lands north of the Rio Salado.

The alternative boundary proposed in public comments represents a new alternative which was not considered in the draft version of this report. This new alternative has been evaluated in Chapter VI, Alternatives and Impacts, under the Amended Boundary Alternative.

The primary reasons for opposition to wilderness designation centered around the WSA's potential for mineral discovery and development. It was also noted that although Sierra Ladrones has a high favorability for economic mineral deposits, because a quantifiable value cannot be placed on such deposits and their development, it would appear that they are not given adequate weight in the resource allocation process. It was further noted that the inability to ascribe a specific value to a potential energy or mineral source should not cause it to be ignored in land planning.

While it is true that a specific value cannot be assigned to the mineral resources in the area, it is known that they are high and may be very high.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 42,688 acres of public land within the Sierra Ladrones WSA would be recommended suitable for wilderness designation. If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, there would be significant impacts to wilderness values because of the added protection of Congressional designation. In addition, there could be significant impacts to mineral resources. Impacts to air, education/research, and realty actions were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the WSA is recommended suitable for wilderness designation, a U.S. Geological Survey and U.S. Bureau of Mines minerals survey would be conducted to supplement current data regarding the mineral-energy occurrence potential for the area.

a. Leasable

Designating the WSA as wilderness would preclude any serious oil and gas exploration or development within the WSA. However, since the area believed to have potential for oil and gas is a narrow strip adjacent to the southwestern boundary of the WSA, much of the area's oil and gas reserves, if present, could be tapped through the use of slant drilling techniques or by drainage.

There would be little or no impacts to geothermal, carbon dioxide, and coal resources.

b. Locatable

Copper, uranium, manganese, silver, fluorite, barite, gypsum and high calcium limestone are known to occur in the WSA, and the potential exists for occurrences of gold, lead, zinc, cobalt, nickel, and tungsten. High economic potential exists for copper and uranium, and the other commodities, except gypsum, are possibly economically recoverable resources. In addition, manganese, cobalt, nickel and tungsten are strategic metals for which the United States is heavily dependent on imports. Should significant commercial deposits of any of these minerals exist, wilderness designation would prevent large scale development of these resources. This could result in a significant impact to mineral resources.

c. Saleable

The WSA contains deposits of rock suitable for crushed stone, and may contain deposits of sand and gravel. However, poor access,

distance to markets, and more readily available materials in other areas restricts development of saleable materials within the WSA. Therefore, wilderness designation would have little or no impacts to development of these resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Existing water, soil, and vegetation conditions would be maintained by restricting surface disturbance and preserving the natural ground cover of the WSA.

b. Wildlife

The 42,688 acres of desert and mountain wildlife habitat in the WSA would be permanently preserved. The natural distribution and abundance of wildlife would be maintained.

Designation of the Sierra Ladrones WSA as wilderness would result in restrictions regarding the placement of wildlife waters for improving wildlife habitat. However, wilderness status would not preclude the establishment of wildlife water sources. A number of wildlife projects could be placed in the wilderness as planned in the Habitat Management Plan.

The impact of wilderness designation on wildlife management activities in the WSA would be low.

c. Visual

The scenic values of the WSA would be permanently preserved.

d. Cultural

Effectively closing the WSA to vehicular entry would reduce the potential for the occurrence of serious or commercial vandalism of cultural sites within the area.

Wilderness designation could restrict archaeological stabilization, excavation, and research within the WSA. These activities could be authorized by the State Director in consultation with the State Historic Preservation Officer on a case-by-case basis.

The inclusion of the WSA in the National Wilderness Preservation System would enhance the scientific and educational values of cultural sites within the WSA by preserving a relatively undisturbed environment from which the human ecology of the WSA during previous occupational periods could be more accurately reconstructed.

e. Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have

an impact on grazing use by narrowing the range of management options available to permittees and BLM.

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be moderate.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are necessary to ranch operations. Vehicle routes necessary to maintain existing developments could be restricted to use by area permittees.

f. Timber Harvest

Wilderness designation would remove approximately 38,800 acres of pinyon-juniper woodland from utilization as fuelwood for both domestic and commercial use. However, inaccessibility, low tree density, small tree size, and the availability of alternate cutting areas have restricted the use of these resources. Denying fuelwood cutting within the WSA would have little impact in the region.

g. Recreation

The WSA is capable of providing visitors with high quality, readily accessible, primitive recreational experiences ranging from hiking, horseback riding, and backpacking to hunting. Wilderness designation would maintain the natural environment which makes possible these human activities in an undisturbed state.

Vehicular associated recreational activities would be prohibited. The WSA, although generally very rugged, could be utilized by off-road vehicles (ORVs). However, numerous alternative areas exist for motorized recreational activities in the surrounding locale.

h. Wilderness Values

Wilderness designation would provide the existing wilderness values present in the area with significant long-term Congressional protection. The BLM could manage the Sierra Ladrones WSA in the long-term to provide a quality wilderness experience.

B. Amended Boundary

Under this alternative, 31,244 acres of public land would be recommended suitable for wilderness designation and 11,444 acres would be recommended unsuitable for wilderness designation. Inholdings within the amended boundary include 373 acres of private land and 1,320 acres of state land. (See Map 23 for amended boundary.)

The amended boundary would include the mountainous core of the WSA, the escarpments and deep canyons along the north bank of the Rio Salado, as well as riparian areas along the Rio Salado. This area has high

wilderness values and could be managed as wilderness. The amended boundary would exclude 8,064 acres from the northwest corner of the WSA and 3,380 acres south of the Rio Salado. Excluding these areas would improve the naturalness and manageability of the WSA by eliminating areas of intensive grazing management and associated rangeland developments as well as private and state inholdings. It would also improve the natural boundaries of the WSA by utilizing the Rio Salado as much of the southern boundary.

If this area is designated wilderness, existing and potential uses would be regulated by the Wilderness Management Policy (BLM 1981).

This section presents an alternate boundary which differs from the boundary presented in the draft report. This readjusted boundary alters the original recommendation by adding approximately eight sections in the southwestern portion of the WSA. This area, which may be described as the "Rio Salado Breaks," contains extensive deeply cut canyons and escarpments as well as riparian areas along the Rio Salado.

Under the Amended Boundary Alternative, there would be significant impacts to wilderness values and there could be significant impacts to mineral resources. Impacts to air, education/research, and realty actions were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

a. Leasable

Impacts to leasable minerals (oil and gas, carbon dioxide, and geothermal resources) would be the same as those described under the All Wilderness Alternative.

b. Locatable

Under this alternative, the majority of the areas favorable for high-calcium limestone, gypsum, and manganese would be removed from further wilderness consideration. The impacts to other locatable mineral resources would be the same as those described under the All Wilderness Alternative.

c. Saleable

Impacts to saleable materials would be the same as those described under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Under this alternative, approximately 11,444 acres of unstable, erodible soils sensitive to disturbance would be excluded. The impacts to water, soils, and vegetation within the amended boundary would be the same as those described under the All Wilderness Alternative.

b. Wildlife

Under the Amended Boundary Alternative, some wildlife habitat utilized by mule deer, pronghorn, and raptors would be removed from wilderness consideration. The remaining 31,244 acres, the core mountain range and riparian zones where a higher distribution and diversity of wildlife species exists, would be permanently preserved.

c. Visual

The most scenic portions of the WSA would be permanently preserved. Under this alternative, box canyons, badlands, eroded rock formations, extensive areas of rimrock, and mesa benchlands which provide an impressive contrast to the granitic upthrust of the WSA's mountainous core would be preserved.

d. Cultural

Under this alternative, several archaeological sites, including possible paleo-Indian sites that may be of considerable significance, would be removed from wilderness consideration. Because ORV access to the sites is possible, disturbance to these sites could occur.

e. Livestock Grazing

Under this alternative, 20 miles of barbed wire fencing, 7 1/2 miles of buried plastic pipeline, 6 livestock drinking troughs, 2 wildlife water troughs, 9 dirt tanks, approximately 20 miles of vehicle routes, 2 developed springs, 1 storage tank, and 1 corral would be eliminated from wilderness management. This would reduce impacts to livestock grazing by eliminating the majority of rangeland developments from the WSA. Although impacts to livestock operations inside the amended boundary would remain the same as those described under the All Wilderness Alternative, their significance would be diminished.

f. Timber Harvest

Under the Amended Boundary Alternative, approximately 11,444 acres of marginal pinyon-juniper woodland would be made available for utilization as fuelwood. Impacts to those resources within the amended boundary would be the same as those described under the All Wilderness Alternative.

g. Recreation

The portion of the WSA with the highest potential for primitive recreation is included in the amended boundary. The impacts to recreation within the amended boundary would be the same as those described under the All Wilderness Alternative.

Under this alternative, the environmental diversity of the WSA and the spectrum of primitive recreational opportunities would be slightly reduced.

h. Wilderness Values

Wilderness designation would provide the wilderness values within the amended boundary with significant long-term Congressional protection. The deletion of southern and western portions of the WSA would enhance wilderness values by removing the majority of rangeland developments and access routes from the area. Under this alternative, the WSA's finest representation of mesa benchlands, badlands, and box canyons as well as the mountainous core of the WSA would be permanently preserved.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 42,688 acres of public land within the Sierra Ladrones WSA would be recommended nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing uses would continue and potential uses would be carried out as described in Chapter III.

The most probable uses of the area are continued livestock grazing, mineral exploration and development, and recreation. Management actions such as rangeland developments and wildlife and watershed projects would also be probable in the future.

These probable uses would result in significant impacts to wilderness values. Impacts to air, education/research, and realty actions were clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values of the Sierra Ladrones WSA would not be provided with long-term Congressional protection. Future mining activity could result in a significant reduction of the area's wilderness values.

The highest mineral development potential is located in the core mountain area of the WSA, generally above 6,500 feet in elevation. Large scale mining activity in this portion of the WSA could significantly reduce the wilderness values of the entire WSA.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Continued low levels of ORV use could result in scars and rutting.

If large scale mineral exploration and development occurs, disturbance to water, soils, and vegetation could be severe, resulting in increased rapid water runoff and erosion.

b. Wildlife

Under this alternative, a wider range of wildlife management actions would be allowed. The result could be the enhancement of

certain wildlife species. Without the effective closure of the WSA to ORV entry, the potential loss of deer to poaching could continue.

If significant mineral development occurs within the core of the WSA, the opportunity to introduce desert bighorn sheep would be foreclosed. This big game species is sensitive to environmental disturbance, particularly when the disturbance is sustained and takes place on a massive scale. The impact to other wildlife species would be less severe, but it is likely mineral development would have an undesirable impact upon all wildlife species.

c. Visual

The WSA is considered to possess high scenic values. Under this alternative, the maintenance of these values would not be ensured due to possible mineral exploration and development. If significant near-surface mineral development occurs in the core of the WSA, scenic values would be severely impacted.

d. Cultural

The cultural values of the WSA could be impacted if ORV use occurs in the large canyons accessible to vehicles and along which many cultural sites occur.

Vehicle access to cultural sites would routinely continue. This would be beneficial to archaeological research, investigations, excavation, and stabilization projects.

The cultural values of the WSA would be impacted if intensive mineral development was to occur. The intensity of human use of the WSA for other purposes (e.g., recreation prospecting) could increase dramatically. These uses would result in insignificant impacts to cultural resources.

e. Minerals

Under the No Action/No Wilderness Alternative, there would be no impacts to mineral and energy resources.

f. Livestock Grazing

Intensive management techniques could be applied and new rangeland development structures could be installed. Livestock operations could be impacted if extensive mineral development occurred.

g. Timber Harvest

Under the No Action/No Wilderness Alternative, there would be no impacts to timber harvest within the WSA.

h. Recreation

The construction of new vehicle access routes within the WSA would open the WSA to increased motorized recreational activities. Deer hunting access would be improved and the scenic qualities of the WSA would become available to a greater number of persons.

If intensive mineral exploration and development occur, primitive recreation opportunities would be reduced.

APPENDIX X

STALLION WSA (NM-020-040)

I. GENERAL DESCRIPTION

A. Location

The Stallion Wilderness Study Area (WSA) is located in Socorro County in central New Mexico. The WSA is situated 14 air miles east, northeast of the community of Socorro.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Bustos Well, Sierra de la Cruz, Sierra Larga North, and Sierra Larga South, New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

The WSA is located on the eastern edge of the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F) and moderately cold at night (15° to 30°F). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 12 to 14 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is characterized by a semiarid mountainous environment which varies from the near vertical rock escarpments and eroded, rugged flanks of the Sierra Larga to rolling pinyon-juniper and grass covered hills. Elevations range from 5,500 feet to 7,100 feet with a maximum relief of 1,600 feet.

C. Land Status

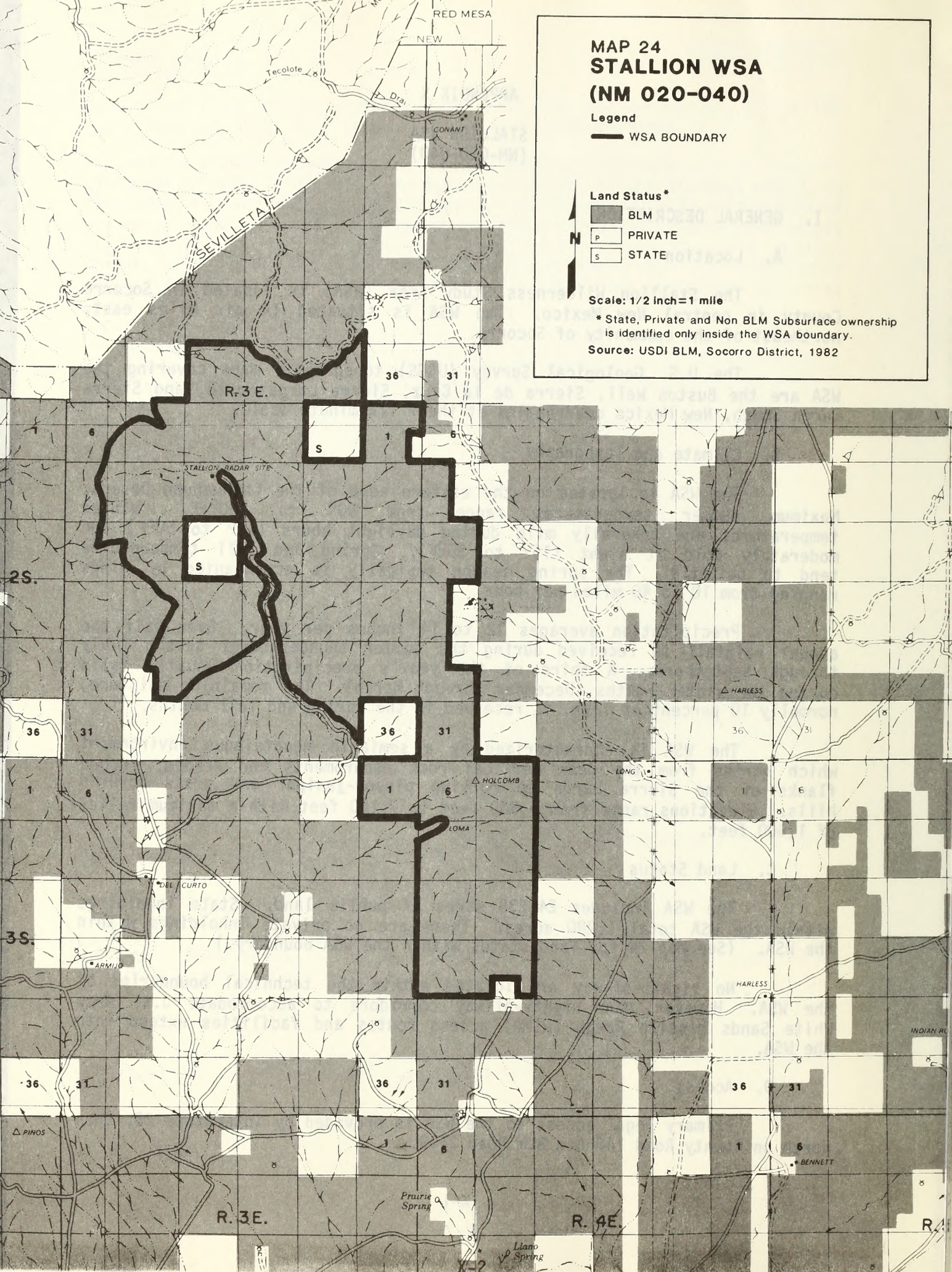
The WSA includes 24,238 acres of public land. State inholdings within the WSA total 1,280 acres. There are no private inholdings within the WSA. (See Map 24 for land status within the WSA boundary.)

No rights-of-way are located within the technical boundaries of the WSA. However, two rights-of-way corridors to accommodate U.S. Army White Sands Missile Range (WSMR) access routes and facilities extend into the WSA.

D. Access

Primary legal access to the WSA is provided by Interstate 25, then north on County Road 146 and BLM Road 2109.

Source: USDI BLM, Socorro District, 1982



II. EXISTING RESOURCES

A. Geology

The Stallion WSA is located within the lightly faulted central area of the Joyita uplift. This series of hills, mountains, and cuestas forms the highlands between the Rio Grande Rift to the west and the Jornada del Muerto Basin to the east. The Joyita uplift merges into the Los Pinos uplift and Chupadera platform to the north, and the Loma de las Canas uplift to the south.

Rock units present in the WSA range in age from Permian to Triassic. The Permian age Yeso formation, Glorieta sandstone, and San Andres limestone are present throughout the WSA. These rocks consist mainly of limestone, shale, sandstone, siltstone, and gypsum. The siltstone, shale, and sandstone of the Triassic age Dockum formation crops out in the southeastern and southwestern portions of the WSA.

B. Water

The western portion of the WSA is located in the Rio Grande Basin and the eastern portion lies in the Jornada del Muerto Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

The only developed ground water source within the WSA is a well with a windmill. No information is available on the water quality of this well. Therefore, information from New Well, which is located just outside the western boundary of the WSA, will be used as representative of the WSA. New Well was drilled to a depth of over 500 feet. Analysis of ground water indicates it is suitable for livestock watering purposes.

C. Soils

The majority of the Stallion WSA is underlain by limestones over sandstones. Approximately 60 percent of the soils occur on limestone. On mesa tops and hills, soils are shallow to moderately deep and gravelly with small inclusions of deep loamy soils in small valleys and swales.

Twenty-five percent of the soils are shallow to moderately deep loamy soils over gypsum. Some of the gypsum areas on the eastern side of the WSA fall into the badland type.

The remaining 15 percent of the WSA has moderate to deep loamy soils that occur in the swales and lower areas.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: pinyon-juniper, grassland, desert shrub, and wasteland.

The pinyon-juniper type dominates the WSA with 94 percent of the WSA classified as this type. One-seed juniper is the aspect vegetation, comprising 3 to 20 percent of the composition. Pinyon, the codominant tree species, varies in composition from a trace to 5 percent. The understory vegetation is dominated by warm-season grasses. The grama grasses are the most prevalent, sometimes making up to 70 percent of the composition on the site. Blue grama and black grama have the highest composition, followed by sideoats grama and hairy grama. Of lesser frequency are various other warm-season grasses, including purple muhly, galleta, Fendler threeawn, ring muhly, sand dropseed, and spike dropseed. Cool-season grasses include silver bluestem, Indian ricegrass, wolftail, bottlebrush squirreltail, and New Mexico feathergrass. Some areas classified as pinyon-juniper, that exist on soils with a high gypsum content, are dominated by gypgrass. Broom snakeweed is the main half-shrub component for the pinyon-juniper type, comprising up to 30 percent of the composition. Other shrubs and half-shrubs present include datil yucca, hairy mountain mahogany, feather peabush, Mormon tea, littleleaf sumac, squawberry, mariola, prickly pear, and ocotillo. In gypsum soils, coldenia is the dominant plant species. Forbs present include ironplant goldenweed, Rocky Mountain zinnia, globemallow, hog potato, aster, and spectaclepod.

The grassland type which covers 2 percent of the WSA is represented by two subtypes. The short grass subtype is located in the northwestern and southeastern portions of the WSA. This subtype is dominated by the grama grasses, and also includes spike and sand dropseeds, burrograss, gypgrass, fluffgrass, ring muhly, and bush muhly. Shrubs present are cholla, datil yucca, slender gray sagebrush, and Mormon tea. Forbs include ironplant goldenweed, globemallow, desert holly, and Russian thistle. The mid-grass subtype is characterized by alkali sacaton. Giant sacaton also occurs in the overflow drainages of the WSA, representing 26 to 88 percent of the composition. Other grasses present are burrograss, blue grama, galleta, vine-mesquite, and mat muhly. Forbs include Russian thistle, desert holly, white horse nettle, and threadleaf groundsel. The only shrub of significant composition in this subtype is broom snakeweed. However, traces of one-seed juniper, fourwing saltbush, cholla, and Apacheplume are present.

The desert shrub type represents 2 percent of the WSA. This type is located in the southeastern and northwestern portions of the WSA. Dominant shrub species are cholla and squawberry. Other shrubs include winterfat, creosote, broom snakeweed, coldenia, slender gray sagebrush, and Mormon tea. Grasses are represented by the gramas, spike dropseed, burrograss, ring muhly, sand muhly, gypgrass, fluffgrass, alkali sacaton, and galleta. Forbs include ironplant goldenweed, globemallow, and wild buckwheat.

Approximately 2 percent of the WSA is classified as wasteland. This area is primarily found on the eastern and northwestern flanks of the Sierra Larga, and is characterized by steep slopes and sparse juniper.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA

does contain habitat which offers potential for the occurrence of five Federally-listed and five state-listed threatened or endangered plant species. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Three Standard Habitat Sites (SHS's) have been identified within the WSA. The habitat sites are based on the combination of dominant vegetation and landform. The SHS's support 169 wildlife species, which include 50 mammal species, 28 reptile and amphibian species, and 91 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file at the Socorro Resource Area Office.

Big game species indigenous to the WSA are mule deer and pronghorn. Mule deer in the WSA's core mountain area are abundant relative to the surrounding region. Deer densities for this portion of the WSA may range as high as three animals per square mile. Pronghorn are not abundant in the WSA.

The most common predator is the coyote. The rocky slopes and bluffs also provide habitat for bobcat and gray fox. Common small mammals include desert cottontails, prairie dogs, black-tailed jackrabbits, white-throated woodrats, deermice, and ground squirrels.

The mountainous topography and numerous rock outcrops are attractive to birds of prey. Commonly sighted birds include red-tailed hawks, sparrowhawks, horned larks, pinyon jays, and ravens.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The FWS furnished the BLM information about one Federally-listed endangered animal species, the American peregrine falcon, which may occur in the WSA. This species was included in a biological assessment (BLM 1982) which revealed that the WSA provides poor quality nesting habitat and there are no current or historically occurring eyries. However, potential habitat exists for supporting migrating individuals. The biological assessment and related correspondence are on file at the Socorro Resource Area Office.

F. Visual

The scenic quality of the WSA is considered moderate. Landforms range from grassland to rolling pinyon-juniper savannah and forest to steep box canyons and rugged multicolored badlands.

G. Cultural

Four cultural sites are currently recorded within the WSA. They range from lithic scatters to a historic structure dating from the first

quarter of the twentieth century. Seventy additional sites are recorded within a 12-kilometer radius of the WSA. The heavy concentration of recorded sites on adjoining lands suggests a high probability for the occurrence of unrecorded sites within the WSA.

H. Air

Generally, the quality of air within the Stallion WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

Seventeen noncompetitive oil and gas leases have been issued or are pending within the WSA. All leases are recently issued or filed and subject to Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979). No exploration or development for oil and gas has occurred in the WSA to date.

A small area along the eastern border of the WSA falls within the Chupadera Mesa exploration area, a Class II favorability area, in a system where Class I is most favorable and Class IV least favorable (Foster and Grant 1974). Another small area along the southeastern border of the WSA falls within the Jornada del Muerto exploration area which is given a Class III favorability rating. However, the vast majority of the WSA is within a Class IV area, the least favorable rating. Paleozoic rocks favorable for the generation of oil and gas underlie the WSA, but faulting probably precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

2. Locatable

There are no valid mining claims within the WSA. The WSA has potential for the occurrence of the following locatable minerals:

a. Copper

Copper deposits in Permian red beds are known to occur in a belt extending from Scholle to Carthage and passing through the WSA. Some of the deposits were mined in the past but have been uneconomic in recent years. The red beds crop out extensively in the WSA. For this reason, the WSA is considered to have moderate favorability for the occurrence of copper mineralization.

b. Gypsum

The Permian age Yeso formation, which contains gypsum, is found in the northern and western portions of the WSA. The deposits are considered to have a low potential for use because of lack of local demand and the availability of more pure deposits in other parts of central New Mexico.

c. Uranium

Uranium is known to occur in Paleozoic limestones and may occur in Late-Tertiary valley-fill sediments in the area surrounding the WSA. Paleozoic limestones crop out in the WSA but past prospecting has not disclosed any uranium occurrences. Late-Tertiary sediments do not crop out in the WSA. The WSA is considered to have low favorability for discovery of uranium deposits.

d. Barite, Fluorite, Lead, Zinc

Deposits of these minerals are known to occur along faults within Precambrian rocks and the Madera limestone in the area surrounding the WSA. The WSA contains Paleozoic limestones, but it is not intensely faulted, and no occurrences of these minerals are known within or near its borders. For these reasons, the WSA is considered to have low favorability for the occurrence of such deposits.

3. Saleable

No material sales have been conducted within the WSA and no future sales are anticipated. The WSA has potential for the development of limestone. The WSA is partly underlain by the San Andres limestone, which may be of high enough purity for use as agricultural lime or in the manufacture of cement. These deposits are considered to have a moderate favorability for development if local demand for the material occurs.

B. Watershed

The WSA is located almost entirely in the Loma Watershed except for four sections which lie in the Storm Watershed. The WSA is composed of differing landforms which include escarpments, box canyons, rolling foothills, mountains, and badlands. The majority of soils are coarse textured with moderate to slow permeability. Approximately 92 percent of the WSA falls in a slight to moderate erosion class and 8 percent in the critical to severe erosion class. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of four grazing allotments lie within the Stallion WSA. All four allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Tecolote Draw	15,939	2,388	9,100	57%
Bordo Atravesado	20,857	2,714	7,091	34%
Sierra Larga	12,608	2,112	4,659	37%
Coyote Spring	11,548	1,512	3,388	29%
TOTAL			24,238	

2. Ranch Management

Permittees periodically inspect and maintain developments with the use of motor vehicles. Fence maintenance is sometimes performed by horseback.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Tecolote Draw	4 miles of fence 1 dirt tank 2 1/2 miles of access route 2 miles of pipeline with 2 drinking troughs
Bordo Atravesado	3 dirt tanks 11 miles of fence 5 1/2 miles of access route 2/10 mile of pipeline with 2 storage tanks
Sierra Larga	1 dirt tank 3 miles of fence 1 windmill 2 miles of road
Coyote Spring	4 miles of fence

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments have been proposed for the WSA at this time.

D. Timber Harvest

Approximately 94 percent (23,000 acres) of the Stallion WSA is classified as nonproductive forest land (New Mexico Forest Inventory 1975). These lands are stocked primarily with juniper, with pinyon pine as a minor component.

Because the area has never been managed for forest products, no information on stand parameters is available. However, field observation provides the basis for the following judgment of the value of forest resources within the WSA.

Site quality is low. This is apparent from the low heights of trees (10 to 18 feet) and the shallow, alkaline soils present. Wide spacing and an estimated 10-percent crown closure indicates that stocking levels are marginal for production of wood products. Poor conformation, inherent in

understocked stands, also limits the usefulness of the potential product. Age class structure is unknown but is certain to be unbalanced due to the preponderance of overmature individuals and a lack of regeneration.

The potential for sawtimber production on a sustained yield basis does not exist within the WSA. Production of posts and poles is probably of marginal value due to the poor conformation of the juniper. At present, fuelwood production is considered marginal due to the lack of physical access to the majority of forested lands and the availability of alternate cutting areas (i.e., Forest Service administered land).

E. Recreation

The WSA is located within 2 hours driving time of Socorro and is visible from the community and much of the Rio Grande Valley. Existing recreational use is low, primarily restricted to deer hunting during the fall.

Potential opportunities for primitive recreational use within the WSA include exploration, horseback riding, day hiking, backpacking, natural history activities such as birdwatching, rock hunting, and landscape-nature photography, and deer hunting.

The recreational use of the WSA is not expected to increase within the foreseeable future.

F. Education/Research

The WSA is not currently being utilized for any known educational or research purpose. Educational and research potential for the WSA may be high for cultural resource studies.

G. Wildlife

Wildlife habitat could be improved through vegetation manipulation and additional water sources. However, no specific actions are planned for the area at present. The WSA has not been identified by the New Mexico Department of Game and Fish for reintroduction of any species.

H. Other--Wild Horses

The Bordo Atravesado Wild Horse Management Area lies partially within the Stallion WSA. A wild horse herd has been present in this area since at least the early 1950's.

The present herd consists of approximately 64 animals with annual productivity of about 13 percent. The herd has a balanced sex ratio and age structure appears to be normal. Levels of mortality are unknown but appear to be low. Mortality is probably related to decimating factors such as predation, accidents, and adverse weather conditions rather than welfare factors (i.e., availability of water).

Management activities have consisted of inventory, round-up, and adoption. Management objectives are to maintain and perpetuate a viable

herd of 32 wild horses with stable population characteristics, and to protect and enhance the wild free-roaming nature of the animals and retain compatibility with other uses of the range.

I. Other--Military

The Stallion WSA is located entirely within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper. WSMR has indicated that an increase in planned testing activities will require additional instrumentation and tracking sites in the Safety Extension Area.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

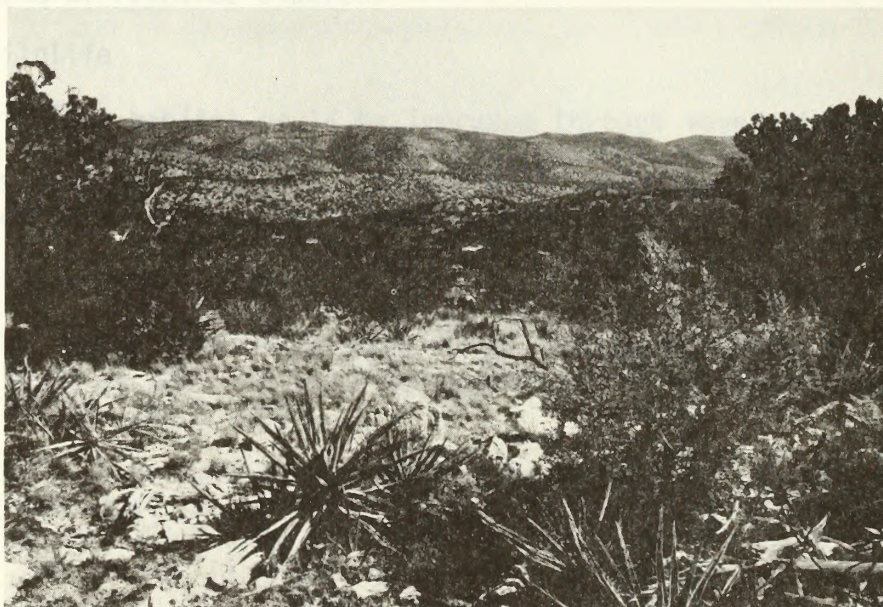
a. Naturalness

The WSA is generally natural in appearance. Intrusions are limited to 5 dirt tanks, 22 miles of barbed wire fence, 1 windmill, 2 miles of pipeline with 2 drinking troughs, 2/10 mile of pipeline with 2 storage tanks, 30 prospect pits, and 20 miles of two-track vehicle routes. In addition to these intrusions, WSMR has an electronic tracking station and a microwave reflector structure on the highest points in the Sierra Larga. Although excluded from the WSA, these intrusions are visible from a number of vantage points within the area.

The naturalness values of the WSA as a whole are not considered outstanding. However, there are area-specific exceptions within the WSA to this general assessment.

b. Solitude

The WSA is isolated, little visited, difficult to access, and rugged. The area's topographic diversity, vegetational screening, and geographic setting contribute to its outstanding solitude opportunities. The airspace over the WSA is utilized by the military for aerial training maneuvers with high performance jet aircraft. The noise associated with these maneuvers is not conducive to a quality solitude experience.



Overview of the Stallion WSA.

c. Primitive and Unconfined Recreation

The WSA can provide visitors with opportunities to experience a pinyon-juniper mountain environment suited to day hiking, deer hunting, horseback riding, and exploration. The WSA is most attractive to these recreational pursuits during the fall, winter, and spring months.

2. Special Features

The WSA supports a small herd of wild horses, which in the opinion of many persons, enrich the WSA's aesthetic and faunal resources.

3. Multiple Resource Benefits

The WSA contains a variety of natural resource values as a result of its undisturbed character. Congressional designation of the WSA as wilderness would provide a greater degree of long-term protection for these natural values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Stallion WSA lies near the northern extreme of the Chihuahuan Desert and the southern edge of the Colorado Plateau Provinces as identified in the Bailey (1976) - Kuchler (1966) Ecoregion Classification System.

Potential natural vegetation consists of 3,000 acres of grama-tobosa shrubsteppe in the Chihuahuan Desert and 21,238 acres of juniper-pinyon woodland mosaic in the Colorado Plateau. However, because of the WSA's geographic location between the Chihuahuan Desert and Colorado Plateau Provinces, these areas are not clearly distinctive. Instead, the two tend to integrate into one another to varying degrees.

b. Distance From Population Centers

Albuquerque and Las Cruces, New Mexico, identified in the 1980 census as a Standard Metropolitan Statistical Area (SMSA), are located within 4 hours driving time of the WSA. El Paso, Texas is located within 5 hours driving time of the WSA.

B. Manageability

To be recommended for wilderness designation, the Stallion WSA must be capable of being effectively managed as wilderness. Manageability is a judgment made by the BLM after considering such factors as state inholdings, valid existing rights, topography, and the overall land ownership pattern.

Grandfathered livestock operations in the WSA are compatible with wilderness management and such things as required access for the maintenance of existing rangeland developments and necessary ranch operations are not expected to create problems for wilderness management.

No valid mining claims are present within the WSA. Seventeen oil and gas leases have been issued or are pending within the WSA, but all are subject to the Interim Management Policy wilderness protection stipulations.

The Stallion WSA lies within a Safety Extension Area used primarily as a safety impact zone in support of several missile test programs conducted at White Sands Missile Range (WSMR). The Safety Extension Area must be evacuated of all human inhabitants during missile firings. The availability of the Area is required for an indefinite period of time to support future military programs requiring a test range in excess of that provided by the main WSMR. WSMR requires reasonable access to the Safety Extension Area to recover missile debris. However, no impacts of this nature have occurred within the WSA to date.

Two instrumentation sites are technically coridored out of but surrounded by the WSA. Future expansion of existing instrumentation sites or the installation of new sites may be necessary either adjacent to or within the WSA.

The presence of the WSA within the WSMR Safety Extension Area would require special management consideration to accommodate the military's needs while preserving wilderness values and ensuring human safety. A permit system and appropriate signing would be desirable features for wilderness management. This would allow a greater degree of control of public access than presently exists and would facilitate WSMR's periodic evacuations of the area. Access to recover possible missile debris would be granted after determining the method which would least impact wilderness values. This is not expected to result in significant problems, however, because of the low probability of a missile impacting in the area.

WSMR has also stated that future test forecasts indicate increased utilization of the area. It is not possible at this time to evaluate the possible manageability problems as a result of increased military use, but because the WSA is located well within the Safety Extension Area, the possibility exists for increased manageability problems resulting from the need to expand existing instrumentation sites and an increase in the probability of missile impacts.

Inholdings within the WSA include 1,280 acres of state land. Acquisition of these inholdings, through voluntary exchange, would enhance manageability.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has generally supported wilderness designation of the Stallion WSA. Reasons cited have concentrated on the WSA's remoteness coupled with its naturalness and solitude values.

Opposition to designation has been intense from several grazing permittees who feel they would be affected by wilderness status. Resource conflicts with grazing use, lack of wilderness characteristics, and conflicts with the White Sands Missile Range (WSMR) use of the Safety Extension Area were most often cited as reasons against wilderness designation.

WSMR personnel expressed concern that designation of Stallion WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

Eighteen letters were received during the public comment period on the draft version of this report. Ten respondents supported wilderness designation for the Stallion WSA. Reasons for this support included the wilderness values of the area as well as the topographic relief which results in scenic vistas and wildlife values. A number of respondents questioned the BLM's assessment of management difficulties resulting from the need to periodically evacuate the area for safety reasons.

The comments concerning the wilderness and supplemental values of the area did not provide new information and these values were considered by the Area Manager in his recommendation for the area. The concerns expressed over BLM's assessment of manageability problems resulting from the location of the WSA in the WSMR Safety Extension Area resulted in a reevaluation of the issue. With the institution of a permit system (see Chapter IV, Manageability), wilderness designation would allow a greater degree of control over visitor use than presently exists. This would aid WSMR in their efforts to periodically evacuate the area and reduce the emphasis placed on visitor safety as a manageability issue. Other manageability problems associated with the Safety Extension Area (including the possible expansion of existing instrumentation sites, possible new sites, and possible access needs to retrieve missile fragments) are difficult to assess at this time because the nature and extent of the predicted increased utilization of the Safety Extension Area are not known.

Eight respondents were opposed to wilderness designation of the Stallion WSA. Mineral values including the geologic favorability for oil and gas, limestone, and copper, were most often cited as reasons. It was also noted that the biological features of the WSA are common to the region. These comments did not provide new information and consequently did not result in a revision of the draft version of this report.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 24,238 acres of public land within the Stallion WSA would be recommended suitable for wilderness designation. (See Map 24 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values would be significant because of the added protection of Congressional designation. Impacts to air and education/research would be clearly significant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the WSA is recommended suitable for wilderness designation, a U.S. Geological Survey and U.S. Bureau of Mines minerals survey would be conducted to supplement current data regarding the mineral-energy occurrence potential for the area.

a. Leasable

The geologic environment of the WSA has a low potential for economically recoverable oil and gas reserves. Therefore, denying exploration and development would have little or no impact on oil and gas development in the WSA.

b. Locatable

The WSA has potential for copper, uranium, gypsum, barite, fluorite, lead, and zinc. Based on current information, wilderness designation would have little impact, since most deposits of these minerals in the area surrounding the WSA tend to be small and are not economically feasible to mine. Wilderness designation would prevent development of these small deposits.

c. Saleable

There would be no impacts to saleable resources.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Designation of the WSA as wilderness would maintain or enhance the existing water, soil, and vegetation conditions by restricting surface disturbance and preserving the natural ground cover of the WSA.

b. Wildlife

The designation of the entire WSA would permanently preserve 24,238 acres of wildlife habitat. The natural distribution and numbers of wildlife species would be maintained.

The impact of wilderness designation on wildlife management activities in the WSA would be low.

c. Visual

The scenic values of the WSA would be permanently preserved by wilderness designation.

d. Cultural

Effectively closing the WSA to vehicular entry would reduce the potential for the occurrence of serious or commercial vandalism of cultural sites within the area.

Wilderness designation would restrict, but not prevent, archeological stabilization, excavation, and research within the WSA. These activities could be authorized by the State Director in consultation with the State Historic Preservation Officer.

The inclusion of the WSA in the National Wilderness Preservation System would enhance the scientific and educational values of cultural sites within the area by preserving a relatively undisturbed environment from which the human ecology of the WSA during previous occupational periods could be more accurately reconstructed.

e. Livestock Grazing

Domestic livestock grazing is a permissible and compatible resource use within wilderness. However, wilderness designation would have an impact on grazing use by narrowing the range of management options available to permittees and the BLM. Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be moderate.

Wilderness designation would not result in the reduction of existing livestock stocking levels. Vehicle routes necessary to maintain existing developments would remain open to use by permittees only.

Approximately 2 miles of pipeline with 2 drinking troughs, which were permitted under the Interim Management Policy, on the Tecolote Draw allotment would be removed. This would result in poorer distribution of cattle on the allotment.

f. Timber Harvest

Wilderness designation would remove approximately 23,000 acres of juniper-pinyon woodland from utilization as fuelwood for both

domestic and commercial use. However, inaccessibility, low tree density, small tree size, and the availability of alternate cutting areas limits the use of this resource. Denying fuelwood cutting within the WSA would have little impact in the region.

g. Recreation

Designation would permanently preserve a desert mountain landscape suitable for primitive recreational uses such as hiking, backpacking, and horseback riding. Vehicle associated recreation use would be restricted, but such use is presently low. Wilderness designation would restrict vehicular access to the area by deer hunters during the hunting season. Recreational use would not increase dramatically if the area is designated wilderness.

h. Other--Wild Horses

Wilderness designation would not significantly impact management of the wild horse herd within the WSA.

i. Other--Military

Wilderness management of the area could include a permit system and appropriate signing which could result in a greater control of visitor use than presently exists. This could enhance the ability of White Sands Missile Range (WSMR) to ensure that the area is free of users during evacuation periods.

If increased military activities in the WSMR Safety Extension Area require additional instrumentation sites or expansion of the existing sites, it is probable that they would not be allowed under wilderness management. It is difficult to assess the impacts of denying the expansion of existing sites or the placement of new facilities. It may be possible to locate new sites outside the area, but the existing sites are in their present position because the topography affords a commanding view of the Safety Extension Area. If wilderness designation constrained necessary instrumentation in this area, it would result in impacts to WSMR.

In the event of a missile impact, carefully controlled access to the area would limit the military's freedom of action in the area, but would not significantly impact the mission of WSMR.

j. Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and the management of the area to maintain wilderness values would produce significant impacts to wilderness.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 24,238 acres of public land within the Stallion WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable uses of the area would be continued livestock grazing and mineral exploration. Expansion of the two existing White Sands Missile Range (WSMR) facilities coridored out of, but surrounded by, the WSA may occur as well as the construction of new facilities and access roads to support WSMR activities. An increase in military flights over the area may also occur in the future. Management actions such as the installation of rangeland developments and watershed control structures would also occur.

The cumulative impact of these probable future uses would result in significant impacts to wilderness values. Impacts to air and education/research would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values of the WSA would not be provided with long-term Congressional protection. Vehicular access and the probable future uses of the area would significantly impact wilderness values in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Impacts to water, soils, and vegetation would be minor unless mineral exploration and development occurs. In the latter event, disturbance to soil and watershed values would result in increased rapid water runoff and erosion.

b. Wildlife

Under this alternative, a wider range of wildlife management actions would be allowed. If mineral exploration occurs and new roads are constructed, wildlife values could be impacted.

c. Visual

The WSA is considered to possess moderate scenic values. Under this alternative, the maintenance of these values could not be ensured.

d. Cultural

The cultural values of the WSA could be impacted if off-road vehicle use occurs in the large arroyos accessible to vehicles and along which most cultural sites probably occur. However, because a majority of the WSA has not been inventoried, it is not possible to effectively assess the significance such disturbance may have on cultural values.

Vehicular access to cultural sites would routinely continue. This would be beneficial to archaeological research, investigations, excavation, and stabilization projects.

e. Minerals

Under this alternative, there would be no impacts to mineral and energy resources. Mineral activity would probably continue to occur at historic levels under the laws and regulations relating to mineral appropriation on public land.

f. Livestock Grazing

Approximately 2 miles of pipeline with 2 drinking troughs, which were permitted under the Interim Management Policy, on the Tecolote Draw allotment would not be removed.

g. Timber Harvest

There would be no impacts to timber harvest within the WSA.

h. Recreation

The WSA is not expected to receive high levels of use by recreationists regardless of how it is managed. However, the spectrum of primitive recreational opportunities available to recreationists could be narrowed if the area is not designated wilderness.

i. Other--Wild Horses

There would be no impacts to wild horse management within the WSA.

j. Other--Military

If nonwilderness management results in additional vehicle routes in the area, it would increase public access and complicate efforts to evacuate the WSMR Safety Extension Area. Access to recover possible missile fragments would still require careful coordination between BLM and WSMR, but would be allowed with fewer limitations. Instrumentation sites could be located in the area subject to environmental analysis.

APPENDIX Y

VERANITO WSA (NM-020-035)

I. GENERAL DESCRIPTION

A. Location

The Veranito Wilderness Study Area (WSA) lies immediately east of the floodplain of the Rio Grande and 4 miles north-northeast of the community of Socorro within Socorro County, New Mexico.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Lemitar and Mesa del Yeso, New Mexico quadrangles at the 7 1/2-minute scale.

B. Climate and Topography

The WSA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours, 40° to 50°F, and moderately cold at night, 15° to 30°F. Spring and fall temperatures tend to be mild. The spring season is typically accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The WSA is dominated by mesa benchlands cut by numerous arroyos. The drainages are not large, with arroyo depth ranging from 20 to 200 feet. The arroyos generally run northeast to southwest and terminate in the Rio Grande floodplain. A series of low-lying, mountainous hills form the eastern boundary of the WSA. The WSA is bound on the northwest by the floodplain of the Rio Grande. Elevations range from 4,600 feet to 5,400 feet with a maximum relief of 800 feet.

C. Land Status

The WSA contains 7,206 acres of public land. There are no private or state inholdings within the area. (See Map 25 for land status within the WSA boundary.)

Approximately 796 acres of the Veranito WSA are located within the White Sands Missile Range (WSMR) Safety Extension Area. This area was established by Cooperative Agreement between the United States Army and the BLM. The agreement requires periodic evacuation of the Safety Extension Area due to its proximity to targeting locations within the Missile Range proper.

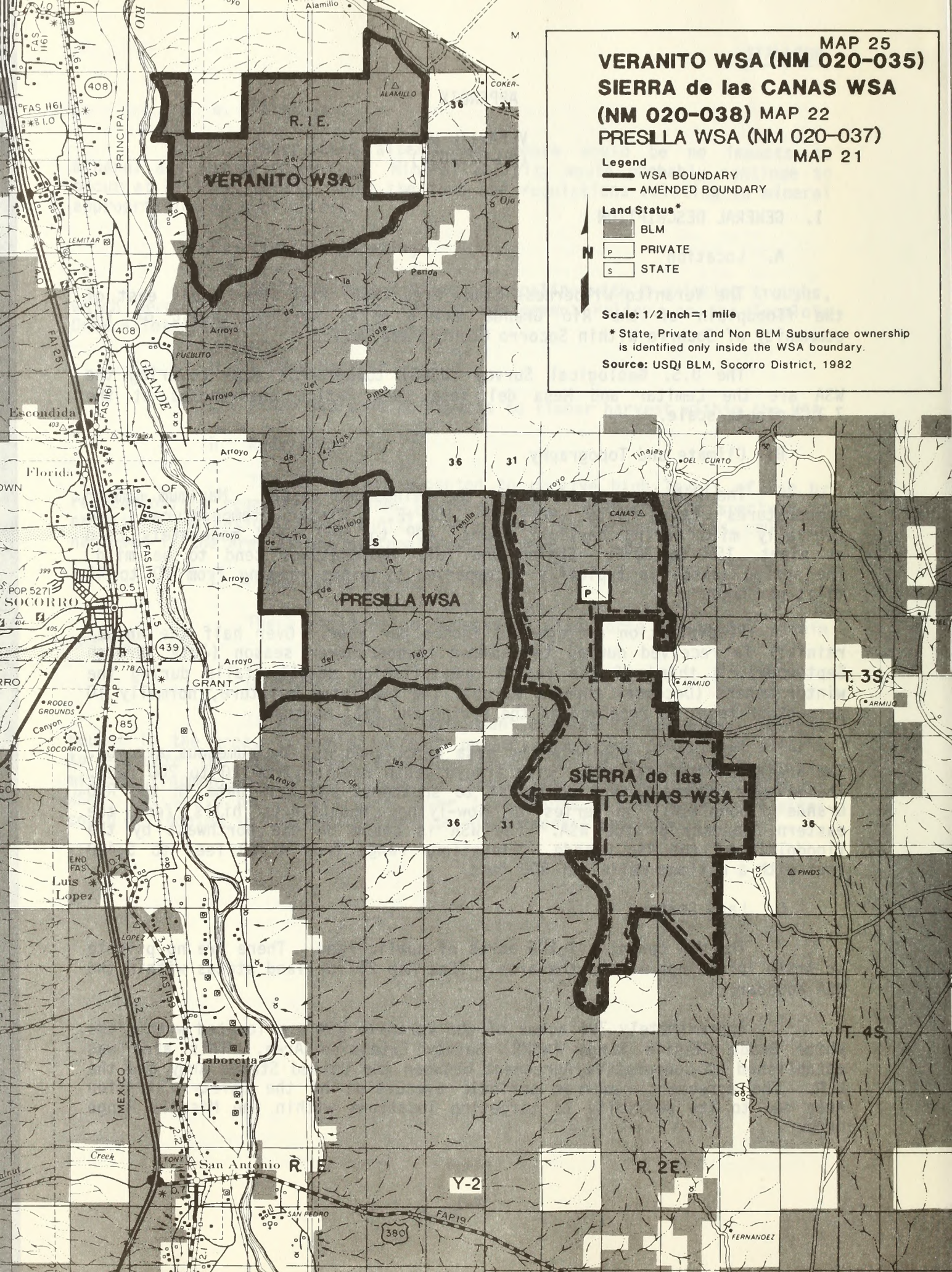
[illegible]

 WSA BOUNDARY
 AMENDED BOUNDARY

<input type="checkbox"/>	BLM
<input type="checkbox"/> P	PRIVATE
<input type="checkbox"/> S	STATE

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Socorro District, 1982



D. Access

Primary legal access to the WSA is provided by Johnson Hill Road (County Road 146). This road is maintained by the County and is suitable for use by two-wheel drive vehicles.

II. EXISTING RESOURCES

A. Geology

The Veranito WSA is located within the Socorro trough, a faulted tectonic depression filled with poorly-consolidated valley-fill deposits and forming a part of the Rio Grande Rift. Records of past earthquakes and pediment surfaces offset by fault scarps indicate tectonic forces are still active within the Rift. Geophysical evidence indicates that a portion of an extensive sill-like magma body, occurring at depths of 18-22 kilometers, underlies the WSA.

Surface rocks in the WSA include Mid-Tertiary volcanics of the Datil formation, Late-Tertiary valley-fill sediments of the Santa Fe formation, and Quaternary alluvium.

B. Water

The WSA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the WSA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

There are no developed ground water sources within the WSA. Developed sources adjacent to the WSA are used mainly for livestock watering purposes. Ground water quality is highly variable in the vicinity of the WSA as water is drawn from shallow and deep aquifers. Shallow ground water is often highly mineralized due to seepage of surface water containing high total dissolved solids. Ground water from deeper bedrock aquifers, usually limestone, is also often high in dissolved solids. Most ground water is suitable for livestock, and in some areas, for human consumption.

C. Soils

The majority of the Veranito WSA consists of rolling ridges with deep gravelly coarse textured soils. Rock outcrops of a hard volcanic tuff occur on many ridge tops. Swales and gently sloping alluvial fans on the east side contain deep loamy soils. Soils along the west boundary of the WSA are strongly influenced by the Rio Grande. On the floodplain, soils are stratified alluvial deposits and often have a high water table and high salt content. Just above the floodplain, there are small areas of deep sandy soils derived from material blown out of the Rio Grande channel and from the Santa Fe formation.

D. Vegetation

1. General

The vegetation of the WSA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Four vegetation types have been identified: creosote, desert grassland, riparian, and mesquite.

Creosote dominates the area, with approximately 88 percent of the WSA classified under this vegetation type. Creosote occurs in all of the upland sites in the WSA and is usually concentrated on alluvium and desert pavement. Grass species associated with this type include fluffgrass, burrograss, black grama, bush muhly, galleta, and spike dropseed. Other plant species include broom snakeweed, prickly leaf dogweed, desert willow, one-seed juniper, mesquite, fourwing saltbush, and Apacheplume.

Approximately 350 acres in the northeastern corner of the WSA are classified as desert grassland. The dominant plant species is burrograss which makes up 73 percent of the composition. Other species present are sand dropseed, galleta, and broom snakeweed.

The northwestern corner of the WSA, which is adjacent to the Rio Grande, includes 415 acres of riparian vegetation. Although the dominant cottonwood is Fremont cottonwood, some narrow-leaf cottonwood is known to occur within the area. Other plant species occurring in this vegetation type include salt cedar, willows, salt grass, and Russian olive. Among the annuals present are Russian thistle and tansy mustard, which are poisonous plants.

The mesquite vegetation type covers approximately 100 acres and occurs immediately east of the riparian community. This type contains some dense stands of mesquite interspersed with alkali sacaton and thickets of wolfberry.

2. Threatened or Endangered Plant Species

The U.S. Fish and Wildlife Service (FWS) has not listed any threatened or endangered plant species that may occur in the WSA. The WSA does contain habitat which offers potential for the occurrence of three Federally-listed and one State-listed species of threatened or endangered plants. A list of these potentially occurring plants is available for review at the Socorro Resource Area Office.

E. Wildlife

1. General

Two Standard Habitat Sites (SHS's) have been identified within the WSA. These SHS's support 213 wildlife species, which include 27 mammal species, 41 reptile and amphibian species, and 145 resident and migratory bird species. A complete list of wildlife species to be found within the WSA is on file at the Socorro Resource Area Office.

Big game indigenous to the WSA are mule deer. Estimated deer densities are low, less than two deer per square mile. Highest concentrations are in the riparian zone adjacent to the Rio Grande and in the arroyos.

The most common predator is the coyote. Bobcat and gray fox also inhabit the WSA and raccoon occur in the riparian zone. Porcupine, desert cottontails, black-tailed jackrabbits, white-throated woodrats, deermice, and ground squirrels are common.

Typical bird species include dove, quail, red-tailed hawks, sparrowhawks, horned larks, ravens, and numerous songbirds.

Reptiles likely to be encountered are the collared lizard, eastern fence lizard, bullsnake, and western diamond-backed rattlesnake.

2. Threatened or Endangered Fauna Species

The Fish and Wildlife Service furnished the BLM information about three Federally-listed endangered animal species which may occur in the WSA: the bald eagle, the American peregrine falcon, and the whooping crane. These species were included in a biological assessment (BLM 1982) which concluded that the WSA provides poor quality nesting habitat for bald eagle and peregrine falcon, and there are no current or historically occurring eagle or falcon eyries within the WSA. The WSA does not provide any potential nesting habitat for the whooping crane. Potential habitat exists for supporting migrating individuals of all three species due to a sufficient food base and water availability in the Rio Grande Valley.

F. Visual

The WSA is a series of undulating parallel ridges cut by numerous shallow arroyos interspersed with high hills and a low elevation east-facing escarpment. Topographic relief is not dramatic and the overall landscape character is considered monotonous and unspectacular.

The only exception to the WSA's generally low scenic values is the cottonwood bosque riparian area. From mid-spring through late fall, this area's visual resource values are considered high due to the structure, contrast, and inherent beauty provided by a cottonwood forest which borders a stark desert landscape.

G. Cultural

The cultural resource values of the WSA are diverse. They range from early pithouse sites to multi-room pueblos. Presently, only three sites are recorded within the boundaries of the WSA. However, many isolated artifacts have been recorded from numerous locations within the area, which suggest the WSA was utilized extensively by Native Americans for subsistence purposes. This conclusion is reinforced by the fact two significant pueblo sites lie within close proximity to the WSA. Further, 89 recorded sites which range temporally from early pithouse (1000 B.C.) to currently occupied historic structures are located within a 10-kilometer radius of the WSA. This vast time range suggests the importance of the cultural resources within the region which surrounds the Veranito WSA. The probability for the occurrence of unrecorded cultural sites within the WSA is high.

H. Air

Generally, the quality of air within the Veranito WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

The only major degradation of air quality occurs during the spring months (March-May), when gusty winds result in dust storms.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Four noncompetitive oil and gas leases have been issued within the WSA. All leases are recently filed and subject to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979). No exploration or development for oil and gas has occurred in the WSA to date.

The WSA is located in a Class IV favorability area, the least favorable classification for discovery of oil and gas. Paleozoic rocks favorable for the generation of oil and gas probably underlie the WSA, but intense faulting precludes significant entrapment of petroleum. The WSA is considered to have low potential for the production of these resources.

b. Geothermal

There are no geothermal leases within the boundaries of the WSA, and no exploration or development has occurred. The WSA is located in the Socorro Peak Geothermal Leasing Area, and about 2 miles from the Socorro Known Geothermal Resource Area.

Indications are that the WSA is underlain by a deep sill-like magma body, and is within 3 miles of a shallow magma chamber. The WSA probably overlies permeable reservoirs and impermeable cap rocks, which suggests that significant volumes of hot fluids may be trapped beneath the ground. For these reasons, the WSA is considered to have high favorability for the discovery of geothermal resources.

2. Locatable

There are no valid mining claims within the WSA. The WSA has potential for the occurrence of the following locatable minerals:

a. Uranium

The Popotosa and Santa Fe formations could be hosts for roll-type stratabound uranium deposits because both formations contain uranium-rich volcanic source rocks, permeable horizons, and may contain reductants such as organic matter or reducing geothermal fluids. The WSA is partly underlain by the Santa Fe formation and may be underlain by the Popotosa formation. The WSA is considered to have a moderate favorability for the discovery of uranium.

b. Manganese, Silver, and Kaolin

There are known occurrences of these minerals associated with Datil volcanics in various areas outside of the WSA. The WSA is partly underlain by Datil volcanics, but does not have any known mineralization. The favorability for the discovery of these minerals is considered to be low.

c. Gold

The WSA contains Tertiary valley-fill sediments and Quaternary alluvium, which may contain placer gold. The Veranito WSA is considered to have low favorability for the discovery of such deposits.

3. Saleable

No material sales have been conducted within the WSA, and no future sales are anticipated. The WSA does have potential for the development of the following saleable materials:

a. Sand and Gravel

Sand and gravel occur in the Santa Fe formation and Quaternary alluvium underlying the WSA. The presence of extensive deposits, proximity to population centers, and ready access suggest that sand and gravel within the WSA could be used in local construction projects. The WSA is considered to have moderate favorability for the development of these resources.

b. Crushed Rock

Volcanic rocks of the Datil formation could be used as a source of crushed rock for local construction, but the existence of similar deposits closer to population centers precludes development of this resource for the foreseeable future. The WSA is considered to have low favorability for the development of crushed rock.

B. Watershed

The Veranito WSA is located entirely within the Parida Watershed. The watershed is classified as a moderate erosion area and includes several different land types. Rolling ridges of gravelly soils occupy most of the WSA. While sheet and gully erosion undoubtedly contributes sediment directly to the Rio Grande, the actual quantities are not known. There are no water control structures or land treatments within the WSA.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments lie within the Veranito WSA. All three grazing allotments are run as cow-calf operations.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Veranito	5,028	445	4,216	83%
Pueblito Community	3,504	240	620	17%
Parida	11,021	1,248	2,370	22%
TOTAL			7,206	

2. Ranch Management

Permittees periodically inspect and maintain as necessary the dirt tank, fences, pipelines and associated developments through the use of motor vehicles. Vehicle access for maintenance of the Veranito pipeline is generally restricted to arroyos.

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name	Type of Development
Veranito	6 miles of boundary fence 5 1/4 miles of interior fence 1 dirt tank 2 3/4 miles of pipeline
Pueblito Community	1 1/2 miles of boundary fence
Parida	3 miles of boundary fence 1 mile of interior fence 3/10 mile of pipeline

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

3. Potential Rangeland Developments

No additional rangeland developments are planned in the WSA at this time.

D. Recreation

The Veranito WSA is within 15 minutes driving time of the City of Socorro and is adjacent to the community of Lemitar in the Rio Grande Valley. This portion of the valley is rapidly developing. Existing recreational use of the WSA is low.

The WSA has potential for primitive recreational use. Activities include exploration, horseback riding, day hiking, and deer hunting.

The recreational use of the WSA is expected to increase to a degree in future years because of the WSA's ease of access and proximity to the community of Socorro.

E. Education/Research

The Veranito WSA is not currently being utilized for any known educational or research project. Education and research potential for cultural resources and riparian studies may exist.

F. Realty Actions

Socorro Electric Cooperative, Inc. was granted a right-of-way (ROW) to construct a wooden pole 14.4kv powerline to service the Chevron Pumping Station in T. 2 S., R. 1 E., Section 2. This ROW, in combination with the Johnson Hill Road, defines the southern boundary of the WSA.

G. Wildlife

The cottonwood bosque riparian area of the WSA is included in the Rio Grande Wildlife Habitat Management Plan (BLM 1982). Planned actions for the area include fencing and prescribed burns. The WSA has not been identified by the New Mexico Department of Game and Fish for the reintroduction of any species.

H. Other--Military

Approximately 796 acres of the Veranito WSA lie within the White Sands Missile Range Safety Extension Area and may be subject to occasional impacts from missile hardware or debris. The military periodically evacuates residents of the Area to ensure their safety.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The WSA appears to be affected primarily by the forces of nature; the imprint of man is substantially unnoticeable. Human impacts in the WSA include approximately 17 miles of barbed wire fencing, 3 miles of buried plastic pipeline, and one dirt tank. The quality of the WSA's natural appearance is not high. Its relatively small size combined with rolling topographic relief and little vegetative screening, accentuates the human intrusions present within the WSA to an undesirable degree. This is especially true in the case of two-track vehicle routes and the buried water pipelines present in the WSA.

b. Solitude

The numerous arroyos which cut the benchlands and the cottonwood bosque in the northwest portion of the WSA provide screening and offer outstanding opportunities for solitude.

The gently rolling creosote desert landscape which characterizes much of the WSA offers little topographic or vegetative screening and opportunities for solitude are considered less than outstanding in these areas of the WSA.

c. Primitive and Unconfined Recreation

During the wilderness inventory, it was determined that the WSA was lacking in outstanding recreational opportunities. The WSA can provide visitors with opportunities to experience a desert environment suited to day hiking, deer hunting, horseback riding, and exploration. The area is most attractive to these recreational pursuits during the fall, winter, and spring months.

The proximity of the WSA to the community of Socorro and its ease of access are important recreational assets. In terms of driving time, the WSA is within 15 minutes of Socorro.

2. Special Features

The WSA's known special features include its cultural resources and its cottonwood bosque.

A significant Piro Indian pueblo is located on the area's boundary and an unusual petroglyph site is present within the WSA. The potential for presently undocumented cultural resource sites is high for the area.

The WSA's 415 acres of cottonwood bosque environment comprises one of the largest publicly-owned tracts of this ecosystem type in the

Middle Rio Grande Valley. Due to the rapid development which is occurring throughout the valley and the conversion of most of the valley's once extensive cottonwood stands to the exotic riparian tree species (salt cedar), the Veranito WSA's cottonwood bosque takes on an importance which outweighs its relatively small size.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Veranito WSA as being in the Chihuahuan Desert Province. The potential natural vegetation of the WSA is grama-tobosa shrubsteppe.



Typical landform and vegetation of the WSA.

b. Distance From Population Centers

Three cities identified in the 1980 census as Standard Metropolitan Statistical Areas (SMSAs) are located less than 5 hours driving time of the WSA. The WSA is approximately 2 hours driving time from

Albuquerque, New Mexico, 3 hours from Las Cruces, New Mexico, and 4 hours from El Paso, Texas.

B. Manageability

The Veranito WSA is manageable as wilderness. Two factors which affect the capability of the Veranito WSA to be managed as wilderness include the White Sands Missile Range (WSMR) Safety Extension Area and other existing uses.

A portion of Veranito WSA lies within the WSMR Safety Extension Area. This Safety Extension Area is used as a safety zone in support of test programs conducted at WSMR. The area must be evacuated periodically during missile firings. The Safety Extension Area is required for an indefinite period of time to support future testing programs at WSMR. WSMR also requires reasonable access to the area to recover missile debris. However, no missile impacts have occurred within the WSA to date. The need to evacuate the area and to have reasonable access to recover missile debris would complicate wilderness management of the WSA.

There is a possibility of continuing off-road vehicle (ORV) use in the WSA. Continued unauthorized ORV use could impact the area's naturalness and the opportunities for solitude in part of the WSA.

V. PUBLIC INVOLVEMENT OVERVIEW

Public involvement in the wilderness inventory and study process has generally indicated support for designation of the Veranito WSA as wilderness. Reasons cited have revolved around the WSA's close proximity to the community of Socorro and the Rio Grande Valley.

Opposition to wilderness designation came from area permittees. Generally, permittees feel wilderness designation would complicate ranch operations and narrow rangeland management opportunities.

White Sands Missile Range (WSMR) personnel expressed concern that designation of the Veranito WSA as wilderness could potentially conflict with military operations within the WSMR Safety Extension Area.

Seventeen letters were received on the Veranito WSA during the public comment period on the draft version of this report. Ten of the letters were opposed to wilderness designation while seven favored designation for the area. Those who favored designation of the WSA disagreed with the BLM's assessment of manageability problems resulting from the WSMR Safety Extension Area. It was also noted that the WSA's proximity to the community of Socorro enhanced its value as wilderness.

Opposition to wilderness designation centered around the area's lack of wilderness values and geologic favorability for geothermal resources, uranium, zeolites, and rare earths.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 7,206 acres of public land within the Veranito WSA would be recommended suitable for wilderness designation. (See Map 25 for WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (BLM 1981).

Under the All Wilderness Alternative, the impacts on wilderness values could be significant. Impacts to air, education/research, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Minerals

If the WSA is recommended suitable for wilderness designation, a U.S. Geological Survey and U.S. Bureau of Mines minerals survey would be conducted to supplement current data regarding the mineral-energy occurrence potential for the area.

a. Leasable

(1) Oil and Gas

The geologic environment of the WSA has a low potential for economically recoverable oil and gas reserves. Therefore, denying exploration and development would have little or no impact on oil and gas development.

(2) Geothermal

The WSA is considered to have high potential for the discovery of geothermal resources. Wilderness designation would preclude exploration or development within the WSA. Should significant geothermal resources be present, slant drilling could possibly be used to tap the resource. However, since there are no existing geothermal leases within the WSA, and wilderness designation would prevent future leasing, it would not be legally permissible to develop geothermal resources beneath the WSA, even though it is technologically feasible to do so. Denying geothermal leasing could, therefore, have the effect of precluding any subsequent development of the resource.

b. Locatable

The WSA has moderate potential for uranium and low potential for manganese, silver, kaolin, and gold. Based on current information, wilderness designation would have little impact, since most deposits of these minerals tend to be small and uneconomical to mine. Wilderness designation would preclude development of these resources.

c. Saleable

The WSA contains deposits of sand and gravel in addition to rock suitable for use as crushed stone. However, the deposits of such materials are widespread in the surrounding areas. Denying material sales within the WSA would have no impact on the availability of these materials.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Designation of the WSA would maintain or enhance existing water, soil, and vegetation conditions by precluding surface disturbance and preserving the natural ground cover of the WSA.

b. Wildlife

The natural distribution and numbers of wildlife species would be maintained.

Designation of the WSA as wilderness would result in the imposition of restrictions regarding the fencing and prescribed burn projects for improving wildlife habitat. However, wilderness status would not preclude the implementation of these projects.

The impact of wilderness designation on wildlife management activities in the WSA would be low.

c. Visual

The scenic values of the area would be permanently preserved by wilderness designation.

d. Cultural

Effectively closing the area to vehicular entry would reduce the potential for the occurrence of serious or commercial vandalism of cultural sites within the area.

Wilderness designation would restrict but not preclude archeological stabilization, excavation, and research within the WSA. These activities could be authorized by the State Director in consultation with the State Historic Preservation Officer on a case-by-case basis.

Protecting the area would enhance the scientific and educational values of cultural sites within the area by preserving a relatively undisturbed environment from which the human ecology of the WSA during previous occupational periods could be more accurately reconstructed.

e. Livestock Grazing

Given the existing ecological rangeland condition, present livestock distribution patterns, and the potential production of range sites in the WSA, it is anticipated that impacts to grazing management would be low.

Wilderness designation would not result in the reduction of existing livestock stocking levels to improve wilderness values. Existing rangeland developments would not be removed so long as they are necessary to ranch operations.

f. Recreation

The WSA is capable of providing visitors with readily accessible recreational experiences ranging from hiking and horseback riding to hunting. Wilderness designation would maintain the natural environment which makes possible these human activities in an undisturbed state.

Vehicular associated activities would be prohibited.

g. Wilderness Values

Wilderness designation would provide long-term Congressional protection for the wilderness values present in the area. This long-term protection and the management of the area to maintain wilderness values could result in significant impacts to wilderness.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 7,206 acres of public land within the Veranito WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing uses would continue and potential uses could be carried out as described in Chapter III. The most probable use of the area would be continued livestock grazing. Vegetation manipulation to improve wildlife habitat could occur. It is not known if the geothermal potential of the area would be developed.

The cumulative effect of these probable future uses combined with the general lack of vegetative and topographic screening in the WSA could result in significant impacts to wilderness values. Impacts to air, education/research, and realty actions would be clearly insignificant; therefore, they were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values of the Veranito WSA would not receive long-term Congressional protection. Continued construction of rangeland developments, vegetation manipulation, and vehicular access could significantly reduce the area's wilderness values in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Continued low levels of off-road vehicle (ORV) use could result in vehicle scars and rutting which could impact the fragile soils in the WSA and increase erosion hazards.

b. Wildlife

Under this alternative, a wider range of wildlife management actions would be allowed. The result could be the enhancement of certain wildlife species.

c. Visual

There would be no significant impacts on the area's visual resources.

d. Cultural

The cultural values of the WSA could be impacted if ORV use occurs in the large arroyos and rolling hills accessible to vehicles. Vehicle access to cultural sites would routinely continue. This would be beneficial to archaeological research, investigations, excavations, and stabilization projects. This is not a significant impact.

e. Minerals

Under this alternative, there would be no impacts to mineral and energy resources. Mineral activity would probably continue to occur at historical levels.

f. Livestock Grazing

There would be no impacts to livestock grazing.

g. Recreation

There would be no significant impacts to the area's recreational opportunities.

WHITE SANDS
RESOURCE AREA

APPENDIX Z

BROKEOFF MOUNTAINS WSA (NM-030-112)

I. GENERAL DESCRIPTION

A. Location

The Brokeoff Mountains Wilderness Study Area (WSA) is located in the southeastern corner of Otero County, New Mexico (T. 24-26 S., R. 19-20 E.), just north of Guadalupe Mountains National Park.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Cienega School, El Paso Gap, La Paloma Canyon, Panther Canyon, and Sheep Draw, New Mexico quadrangles. All of these maps are at the 15-minute scale.

B. Climate and Topography

Hot summers (60°-100°F) and mild winters (25°-55°F) characterize the WSA. Precipitation occurs primarily during the summer and ranges between 8 and 14 inches annually.

The WSA consists of a desert mountain range which follows a north-south trend and joins the southwestern wall of the Guadalupe Escarpment near the New Mexico-Texas State Line. The range gradually ascends from an average height of 4,600 feet in the northern half of the WSA to a high point of 6,550 feet on Cutoff Ridge.

Two canyons, 500-600 feet deep, and a ridge are the dominant topographic features. Chosie Canyon (with its tributary Wildcat Canyon) and Humphrey Canyon (which splits into Panther and West Dog Canyons) empty to the west and their drainages engulf the central two-thirds of the WSA. Cutoff Ridge, in the southernmost portion of the WSA, rises 3,000 feet above the surrounding terrain and leads directly to the Guadalupe Escarpment. Several smaller ridges and canyons are present in the central and northern portions of the WSA while the western boundary consists of flat terrain.

C. Land Status

The WSA contains 31,386 acres of public land and 1,520 acres of state inholdings. (See Map 26 for land status within the WSA.)

D. Access

The western boundary of the WSA is accessible from privately maintained ranch roads branching off State Highway 506. These roads can be followed around the northern and eastern edges of the WSA.

MAP 26 BROKEOFF MTS. WSA (NM-030-112)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

GUADALUPE MTS. NAT'L PARK

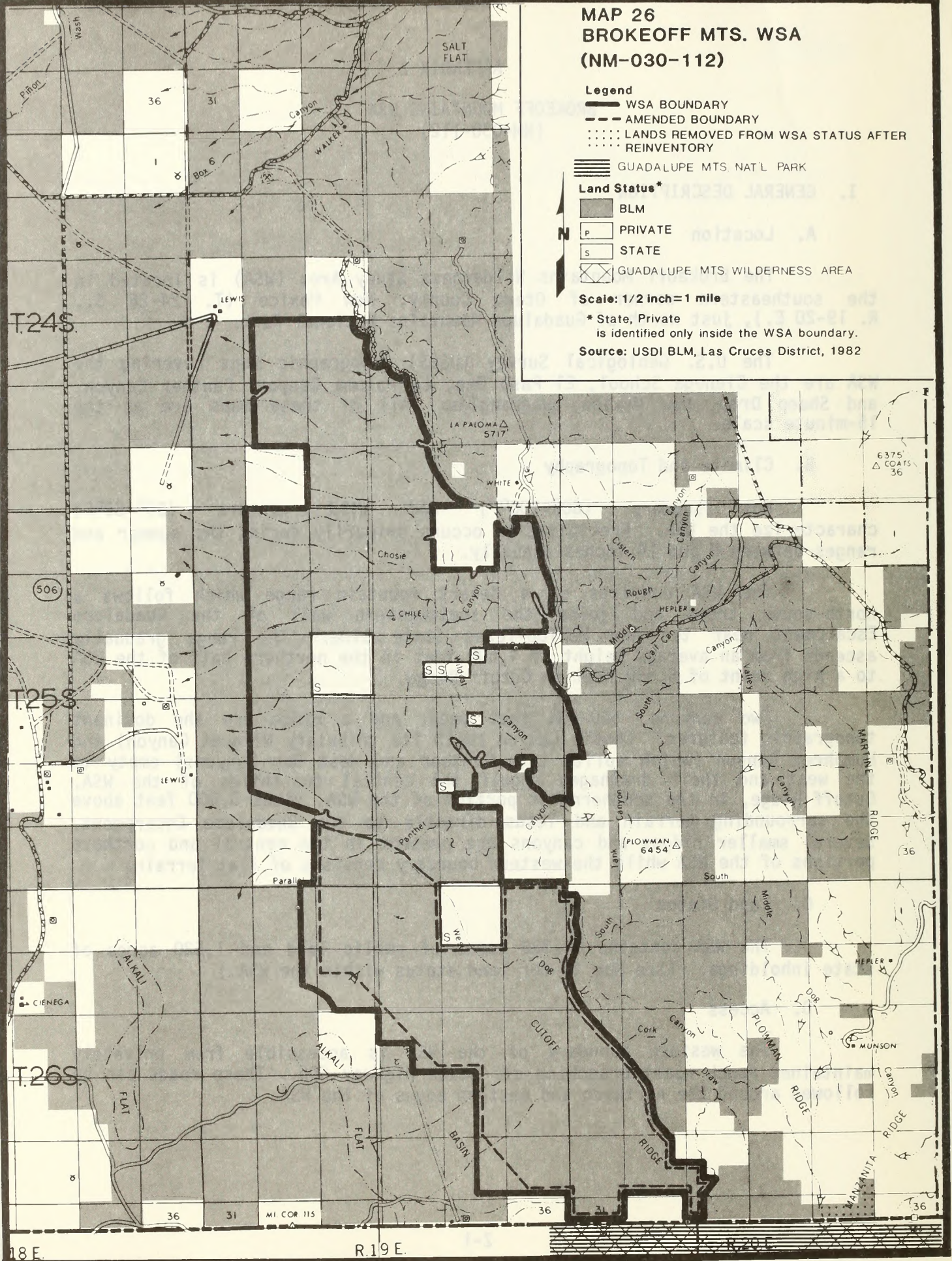
Land Status*

- BLM
- P PRIVATE
- S STATE
- GUADALUPE MTS. WILDERNESS AREA

Scale: 1/2 inch = 1 mile

* State, Private
is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The Brokeoff Mountains consist of north to northwest trending blocks of faulted Permian sediments. These sediments were deposited approximately 250 million years ago along the northwest shelf of the Delaware Basin, now a prolific oil producing area. Dolomite, limestone, and lesser amounts of gypsum, sandstone, and shale accumulated in this basin which began subsiding in the late Pennsylvanian time and continued to subside during the Permian time.

Several geologic features indicate that the Brokeoff Mountains have favorable oil and gas potential. A major stratigraphic consideration is the presence of favorable source and reservoir rocks. Permian reservoir rocks have been exposed and eroded throughout much of the area and Permian hydrocarbon reservoirs have been subject to fresh water flushing. However, assuming that the pre-Permian section containing good petroleum source and reservoir rocks exists in this area and is similar to elsewhere in the Delaware Basin, petroleum accumulations in pre-Permian reservoir rocks may remain intact. Furthermore, Black (1975) has projected the Abo reef trend (late Pennsylvanian-early Permian) as extending southwest across the Huapache monocline toward the Brokeoff Mountains area. If this projection is correct, shallow reservoirs of oil and gas may be present.

Although Basin and Range faulting has probably had a disruptive effect on hydrocarbon accumulations, some tilted fault blocks may enclose sands which are potential oil and gas traps. Also, tectonic disruption and fresh water flushing are less evident on the western flanks of the mountains and into the basin (Black 1975).

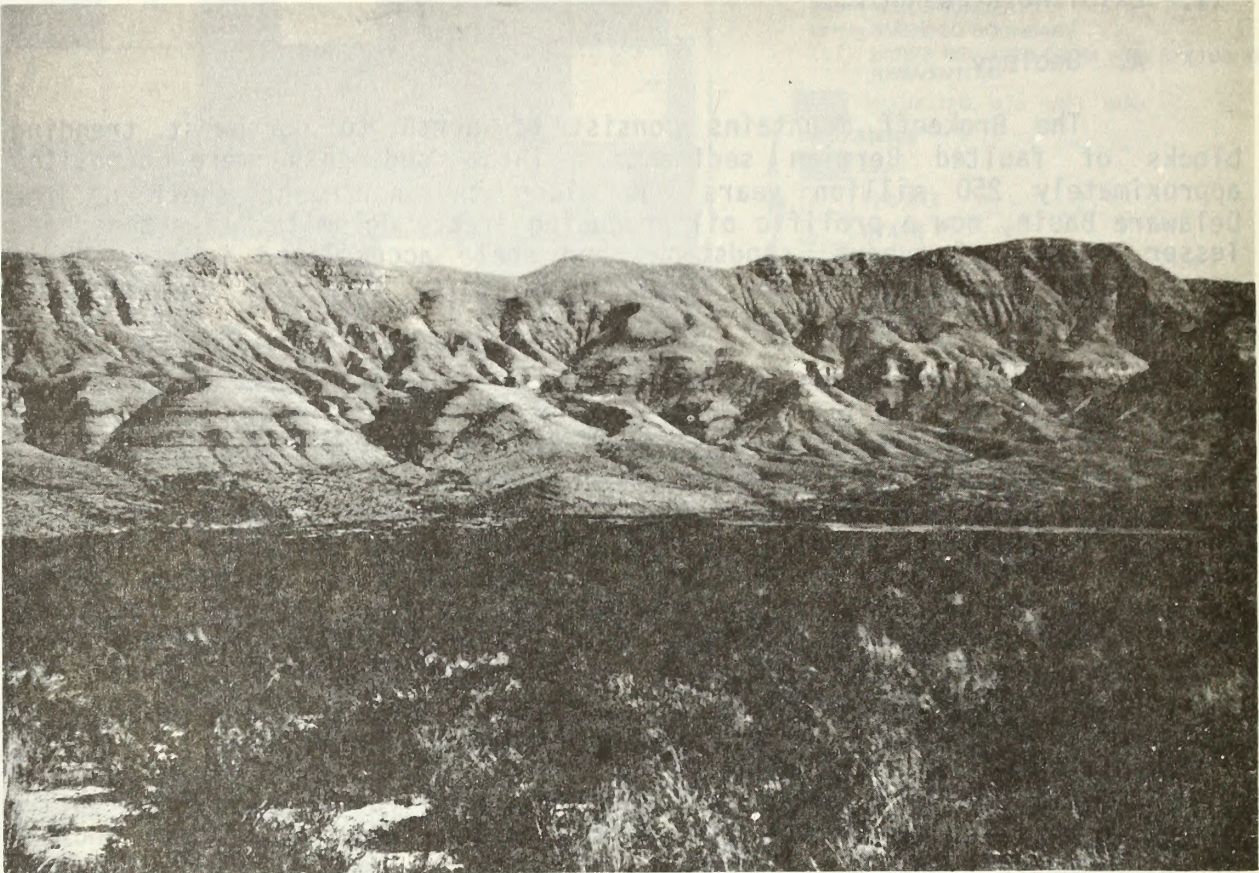
Exposed sediments contain a variety of paleontological features. None of these features are considered unique and most are molds or silica replacements exhibiting only gross detail. The more common types include brachiopods, pelecypods, gastropods, fusulinids, corals, crinoids, and ammonites. Sponges, echinoid spines, and trilobite fragments occur less frequently.

B. Water

The Brokeoff Mountains WSA is situated within a closed basin (Salt Basin) which comprises approximately 5,900 square miles in Texas and New Mexico.

Principal drainage courses within the WSA include Chosie and West Dog Canyons which empty on the alkali flats to the west. Streams within these drainages flow for only brief periods following heavy precipitation.

Ground water in the WSA and to the immediate west occurs primarily in two geologic units: Bone Springs limestone and valley fill. In the valley to the west, water is normally less than 200 feet below the surface; in the upland area bordering the valley bottom, the depth normally exceeds 400 feet. Significant recharge to the ground water occurs in the WSA through infiltration in the large network of ephemeral streams.



View of the west side of the Brokeoff Mountains WSA.

C. Soils

Five soil associations are present in the Brokeoff Mountains WSA (USDA 1981).

Soil Association	Acres	Percent of WSA	Texture	Slope
Rock Outcrop - Lozier Complex	26,898	85.7%	Gravelly Loam	20-65%
Reakov-Tome - Tencee Complex	3,139	10%	Silt Loam	0-5%
Gypsum Land - Holloman Complex	313	1%	Very Fine Sandy Loam	0-5%
Ector - Rock Outcrop Complex	94	.2%	Gravelly Loam	20-50%
Lozier - Rock Outcrop Complex	942	3%	Very Gravelly Loam	5-20%
TOTAL	31,386			

D. Vegetation

1. General

Three range sites are present in the Brokeoff Mountains WSA.

Range Site	Federal Acres	Percent of WSA	Major Vegetation
Limestone Hill	27,934	89%	Grassland - (black grama, ring muhly, bush muhly, threeawn, slim triden, fluffgrass) (Scattered pinyon-juniper)
Gravelly Loam	3,139	10%	Grassland - (black grama, dropseed, tobosa, burro grass) Desert shrub - (broom snakeweed, yucca, winterfat, creosote)
Gypsum	313	1%	Grassland - (gyp grama, alkali sacaton, burro grass, tobosa) Desert shrub - (Mormon tea, chamisa, creosote)
TOTAL	31,386		

2. Threatened or Endangered Plant Species

There are no known Federally-listed threatened or endangered plant species within the WSA. Sophora gypsophilia var. guadalupensis is a rare plant species currently under review for listing as threatened or endangered. This plant is known to occur in the Brokeoff Mountains.

E. Wildlife

A variety of wildlife utilize the different habitat types created by the various geomorphic features and diversity of vegetation of the Brokeoff Mountains (USDI 1974).

Cliffs, ledges, and rock outcrops provide suitable nesting and perching habitat for numerous bird species, particularly raptors. Canyon bottoms and mountain slopes throughout the area are utilized by mule deer year-round; however, populations fluctuate seasonally depending on the severity of winters in the nearby Guadalupe Mountains. Elk occasionally migrate from the Guadalupe Mountains and may be seen in the fall and winter. The degree to which these elk use the Brokeoff Mountains is not believed to be critical to the herd's viability.

F. Visual

The Brokeoff Mountains break off from the southwestern wall of the Guadalupe Escarpment. The Range then extends to the north, paralleling the

western wall of the Escarpment, and provides scenic vistas for visitors to the Guadalupe Mountains National Park. Approximately 29,422 acres are within a Visual Resource Management (VRM) Class II area, while 1,964 acres along the western boundary are Class III.

G. Cultural

Archaeological information for the Brokeoff Mountains is incomplete. One processing/procurement site has been found in the area; however, it is not believed to be unique. Site density within the WSA is believed to be low.

H. Air

Generally the air quality of the Brokeoff Mountains WSA is good. The WSA has a Class II air quality classification, which allows for moderate deterioration associated with moderate well-controlled industrial and population growth. The nearest major sources of pollution are in El Paso, Texas and Ciudad Juarez, Mexico, 80 miles to the west.

The WSA adjoins Guadalupe Mountains National Park. The Park has been given Class I air quality classification.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

The Brokeoff Mountains WSA is located on the western edge of the Delaware Basin, a known oil and gas producing area. Presently, all production in this basin is east of the Huapache monocline which is approximately 15-20 miles east of the WSA. Only sporadic exploration has taken place west of this monocline. In New Mexico, six wildcat wells have been drilled within a 10 mile radius of the WSA. Three of these wells, Coral Oil and Gas #1 Warren, approximately 7 miles northwest of the WSA, and Weaver #1 Thompson and Campbell #1 McMillan Federal, approximately 7 1/2 and 6 1/2 miles north of the WSA respectively, have had shows of oil or gas. Two wells within 1 mile of the WSA boundary (T. 25 S., R. 20 E., Section 18 and T. 25 S., R. 19 E., Section 31) did not have shows.

The Minerals Management Service has classified this area as prospectively valuable for oil and gas. Thirty Federal oil and gas leases are within the boundaries of the WSA. Twenty-three of these leases (19,500 acres) are pre-Federal Land Policy and Management Act (FLPMA) leases, while the other seven (6,500 acres) are post-FLPMA.

The true potential of the Brokeoff Mountains WSA for oil and gas can only be assessed after additional exploration and drilling have been accomplished. On the basis of currently available geologic information, the oil and gas potential is theoretically favorable.

B. Watershed

There are no wells located within the WSA, however, several are situated in the surrounding area. The water quality is generally acceptable for livestock and irrigation. However, it is less acceptable for domestic uses due to a high concentration of bicarbonates and sulfates. There is no water available for recreational use.

C. Livestock Grazing

1. Allotments

There are seven grazing allotments located wholly or partially within the WSA. Three of these allotments (Hughes Brothers Partnership, John White, and Clifton Dean) graze sheep as well as cattle and horses. The other four allotments (Diamond A, Les Foster and D. D. Barker, Jim Ballantine, and Marlin Richardson) graze only cattle and horses. The sheep and cattle allotments are located in the mountainous areas on the east side of the WSA. The four cattle allotments are located in the foothills and lower areas on the west side of the WSA.

ALLOTMENTS WITHIN THE WSA

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment	AUMs in WSA	Percent of AUMs
Hughes Brothers 9021	14,539	3,336	3,387	23%	760	23%
Diamond A 9033	19,760	2,112	5,562	28%	768	36%
Les Foster and D.D. Barker 9038	5,810	852	3,175	55%	474	56%
Jim Ballantine 9040	11,824	1,577	3,174	27%	493	31%
Marlin Richardson 9039	15,965	3,048	11,389	71%	2,148	70%
John White 9062	9,519	1,589	2,087	22%	350	20%
Clifton Dean 9008	2,612	588	2,612	100%	588	100%
TOTAL			31,386		5,581	

2. Ranch Management

Maintenance, repair, and cleaning of dirt tanks occurs approximately every 5 years and requires the use of heavy equipment such as a bulldozer. Water hauling requires motorized access while other activities (e.g. livestock counts, fence maintenance, placing salt, and roundup) involve the use of both horses and motorized vehicles depending on the accessibility of a particular area and the magnitude of the work to be accomplished.

D. Recreation

The BLM has little visitor use data for the Brokeoff Mountains. Approximately 100-200 deer hunters are believed to visit the area every fall (Bruce Morrison 1982). Big game hunting is the primary use in the area and associated activities include off-road vehicle use, hiking, and camping.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Brokeoff Mountains WSA generally appears to have been affected primarily by the forces of nature.

Imprints of man have their greatest impact in the northern half of the area. Although this portion of the WSA generally appears natural, its natural appearance is compromised by vehicular access routes and rangeland developments. Seven miles of vehicular access routes cross this portion of the WSA. The most noticeable of these is a route which follows a ridge crest to a dirt tank and lacks both vegetative and topographic screening. Rangeland developments include: a white metal tank which can be seen for over a mile, a dirt tank, and 23 miles of sheep fence.

Rangeland developments south of Humphrey Canyon include three revegetated dirt tanks, an abandoned drinking trough, and 10 miles of sheep fence. These developments are topographically screened and create very little visual contrast.

b. Solitude

The area offers outstanding opportunities for solitude which are enhanced primarily by the WSA's size, boundary configuration, and rugged topography and, to a lesser degree, by vegetative screening, remoteness of various portions of the WSA, and designated wilderness to the south.

The WSA contains the most prominent portion of the Range and is approximately 12 miles long (north to south) and 2-5 miles wide. The rectangular shape enhances opportunities to find a secluded spot.

Nine canyons lie between the major ridges and empty to the west. These features divide into countless smaller ridges with drainages between each and provide screening and opportunities for seclusion. The western boundary of the WSA is less rugged, consisting primarily of flat to rolling terrain.

Due to the rugged terrain and lack of vehicular access to the southern half of the WSA, opportunities exist to find a secluded spot in this area. In addition, this area is contiguous with the Guadalupe Mountains Wilderness Area which offers outstanding opportunities for solitude. The rugged terrain of the northern half of the WSA is sufficient to offer ample opportunities for solitude. However, vehicular access is greater and the topography is less challenging than in the southern half.

c. Primitive and Unconfined Recreation

The WSA offers outstanding opportunities for primitive and unconfined types of recreation which are based primarily on the WSA's size

and topographic relief. Recreation opportunities are limited to hiking, backpacking, and horseback riding.

The WSA is blocked up so that visitors may spend several days hiking the Brokeoff Mountains. In addition, the adjacent Guadalupe Mountains Wilderness Area is managed by the National Park Service for primitive and unconfined types of recreation. The WSA is large enough to accommodate a 3-4 day trip. Longer trips may be taken by continuing into the Guadalupe Mountains Wilderness Area. Scenic vistas are present in the WSA and opportunities exist for sightseeing and photography. Deer are present and opportunities for big game hunting are available.

2. Special Features

The WSA contains outstanding scenic quality. Paleontological features are also present; however, these features are fairly common and are not believed to possess significant scientific or educational values. None of these features significantly contribute to the WSA's wilderness character.

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the area as being in the Chihuahuan Desert Province with potential natural vegetation of approximately 27,206 acres of grama-tobosa shrubsteppe and 4,180 acres of Trans-Pecos shrub savanna.

b. Distance from Population Centers

The Brokeoff Mountains WSA is a 3 hour drive from El Paso, Texas and a 4 hour drive from Las Cruces, New Mexico.

B. Manageability

The Brokeoff Mountains WSA is presently capable of being effectively managed to preserve its wilderness character over the long-term. In making this determination, several factors were evaluated, including: size, land status, management of and access to inholdings, and management of contiguous National Park Service land. The implications of oil and gas leases within the WSA were considered; however, their impacts cannot be assessed at this time.

The WSA contains 31,386 acres of public land and 1,520 acres of state inholdings. There are also 265 acres of state land (T. 26 S., R. 20 E. Section 32) which are surrounded by the WSA on three sides and the Guadalupe Mountains Wilderness Area on the fourth. Grazing is currently the only use of these inholdings and vehicular access is available in the form of vehicle routes and along arroyo bottoms. Management of these lands does not presently conflict with wilderness preservation. However, manageability of the WSA could be improved by their acquisition (particularly the 265 acres lying between the WSA and the Guadalupe Mountains Wilderness Area) since the BLM could then ensure that they continue to be managed in a manner fully compatible with wilderness preservation. This would also increase the acreage in direct contact with the Guadalupe Mountains Wilderness Area.

Most of the WSA has been leased for oil and gas development. Pre-Federal Land Policy and Management Act (FLPMA) leases account for 19,500 acres and may be regulated only so long as development of lease rights is not unreasonably interfered with. There are also 6,500 acres of post-FLPMA leases, which may be regulated to prevent impairment of wilderness values. Although the effects of these leases on the manageability of the WSA cannot be assessed until additional exploration is conducted, it is assumed that development of the pre-FLPMA leases could degrade wilderness values if developed.

V. PUBLIC INVOLVEMENT OVERVIEW

Public comment periods were conducted during the initial and intensive wilderness inventories in 1979 and 1980. Several comments were received in opposition to WSA status for the Brokeoff Mountains. General reasons for opposing WSA status included oil and gas exploration activity, minerals potential, and current livestock use. One comment stated that wilderness designation would rule out states' rights on state sections. These issues were not addressed during the inventory process since a WSA decision could only be based on the presence or lack of wilderness characteristics. The comments were retained and used during the preparation of this document.

During the public comment period on the Draft Environmental Assessment Wilderness Study Areas in the Las Cruces District (BLM 1983), a total of 121 inputs were received on the Brokeoff Mountains WSA.

Of the 116 inputs favoring wilderness designation, 97 were considered to be form letters. Although the form letters were not identical, it was obvious that the letters consisted of nearly identical sentences and paragraphs that had been arranged in a different order.

Comments regarding the Brokeoff Mountains wilderness values were generally broad statements such as "wilderness characteristics are unquestioned and a variety of wild animals utilize the many different habitat types" and "offers outstanding opportunities for solitude and primitive recreation."

These comments did not provide any additional discussion to change BLM's evaluation of the quality of the area's mandatory wilderness characteristics.

Numerous comments supported wilderness designation because the WSA is next to the Guadalupe Mountains National Park or because the National Park Service (NPS) supports wilderness designation. While both points are correct, to be recommended suitable for wilderness designation the Brokeoff Mountains WSA must be suitable for wilderness designation on its own merits. The nonsuitable recommendation was based on the area's marginal wilderness values and potential for oil and gas development. These comments did not provide any additional information to alter this assessment.

Comments on the oil and gas conflicts in the area by those favoring wilderness designation stated that oil and gas potential was theoretical, not actual, or that oil and gas development could occur elsewhere. These comments did not provide any specific discussion of the area's oil and gas potential and do not alter the BLM's assessment of the WSA as prospectively valuable for oil and gas.

One comment states, "the EA makes quite arbitrary value judgments about the relative value of mineral exploration versus protection of wilderness. The BLM's task is to determine suitability for wilderness." The BLM Wilderness Study Policy states that "recommendations as to an area's suitability or nonsuitability will reflect a thorough consideration of any identified or potential energy and mineral resource values." Therefore, the BLM is obliged to consider all existing information prior to formulating a final recommendation as to an area's suitability. The final decision of wilderness versus oil and gas potential will be made by Congress.

The NPS comments on the Brokeoff Mountains WSA provided both specific resource comments, which have been incorporated into the appropriate sections of this report, and disagreement with BLM's recommended action. The majority of the disagreements were based on the potential impacts of the recommended action to the National Park. The NPS specifically discussed the impacts of oil and gas development on the aesthetic qualities of the National Park, the increase of interaction between domestic animals with the Park ecology, and the desire to enhance the protection of the National Park from the impact of oil and gas development.

The purpose of the BLM wilderness review process is to identify BLM land suitable for preservation as wilderness. BLM recommendations are not intended to be used to ensure protection of existing wilderness areas nor to enhance the values of other lands.

Comments opposing wilderness designation for the WSA discussed the area's oil and gas potential or the lack of wilderness potential for the area. These comments did not provide any additional specific information.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 31,386 acres of public land within the Brokeoff Mountains WSA would be recommended suitable for wilderness designation. (See Map 26 for location of the WSA boundary.)

If designated wilderness, the existing uses and activities in the area and the potential uses identified in BLM planning documents (see Chapter III) would be managed under the constraints of the Wilderness Management Policy (WMP) (BLM 1981).

Under the All Wilderness Alternative, minerals and wilderness values could be significantly impacted in the long-term. The impacts on air and education/research were clearly insignificant; therefore, they were not included in the following discussion.

1. Impacts to Minerals

Despite the theoretically favorable potential for oil and gas in the Brokeoff Mountains WSA, there is no exploration or production at this time. After wilderness designation, the existing oil and gas leases, if unexplored, would not be reissued. No new leases would be let after wilderness designation. Therefore, if this inactivity continues, oil and gas leases within the WSA would expire beginning in February 1984, and after the last lease expires in 1992, oil and gas activities would not be permitted. Future options to explore for and develop oil and gas resources in the WSA would be forgone.

On the other hand, if oil and gas drilling is initiated and in progress on the anniversary date of a lease, a 2-year lease extension would be granted. Should any wells go into production prior to the lease expiration date, they would be allowed to continue production until reserves are exhausted. Of the 30 oil and gas leases within the WSA, 23 (19,500 acres) are pre-Federal Land Policy and Management Act (FLPMA) leases. Development of these leases could be allowed to impair wilderness values.

On the seven post-FLPMA leases (6,500 acres), all activities are subject to the nonimpairment criteria and, in most instances, full development of lease rights would not be allowed.

These impacts could be significant in the long-term if economic oil and gas reserves are found in the WSA.

2. Impacts to Other Resources and Uses

a. Livestock Grazing

The Wilderness Act specifically allows livestock grazing to continue in designated wilderness where such use was established prior to designation. However, some restrictions would still be imposed. For example, the construction of new rangeland developments would be approved with necessary stipulations to prevent impairment of wilderness values.

According to the WMP, "occasional use of motorized equipment" is permitted "where practical alternatives do not exist" and should be "expressly authorized in grazing permits." If the Brokeoff Mountains WSA is designated wilderness, a management plan would be prepared explaining what types of access and rangeland management activities would be restricted or permitted. Restrictions on rangeland management activities could have an impact on livestock grazing.

b. Recreation

Hunting constitutes the primary recreational use of the Brokeoff Mountains. Since hunting is allowed in wilderness areas, it would not be directly affected by wilderness designation. However, motorized access would be limited to the surrounding boundary roads and some hunters could decide to visit other areas. Off-road vehicle use would be prohibited; however, this would not be a significant impact due to the light use presently occurring and the vast amount of land available for these activities elsewhere.

c. Wilderness Values

Wilderness designation would benefit the wilderness values present by providing them with significant long-term Congressional protection. The area would retain its natural appearance and be managed to provide outstanding opportunities for solitude and primitive and unconfined recreation.

d. Other Resources

Restrictions on surface disturbing and mechanized activities would provide protection for the following resources: water, soils, vegetation, wildlife, cultural, and the rare plant Sophora gypsophila var. guadalupensis. Scenic values, including views from State Highway 506 and the Guadalupe Mountains Wilderness Area, also would be preserved.

B. Amended Boundary

Under this alternative, 12,277 acres of public land within the Brokeoff Mountains WSA would be recommended suitable for wilderness designation. The amended boundary would exclude 19,109 acres of public land in the northern portion of the WSA.

Under the Amended Boundary Alternative, minerals and wilderness values could be significantly impacted in the long-term. The impacts on air and education/research were clearly insignificant; therefore, they were not included in the following discussion.

1. Impacts to Minerals

Approximately 9,735 acres of pre-FLPMA leases and 1,900 acres of post-FLPMA leases are included within the amended boundary. Approximately 14,365 acres of pre- and post-FLPMA leases currently within the WSA lie outside the amended boundary. The impacts to those leases within the amended boundary would be the same as those described under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Visual

Visual resources within the amended boundary would be retained in the long-term. The amended boundary consists entirely of Class II scenery and includes the most prominent topographic features in the Brokeoff Mountains WSA. The Class III and Class II scenery outside the amended boundary could be degraded in the long-term.

b. Livestock Grazing

The number of grazing allotments affected would be reduced from seven under the All Wilderness Alternative to four under the Amended Boundary Alternative, and the number of animal unit months (AUMs) affected reduced from 5,372 to 1,901.

c. Recreation

Under this alternative, there would be minimal impacts on hunting and other activities dependent on motorized access. This portion of the WSA is very rugged and vehicular access would be limited regardless of whether or not the area is designated wilderness.

d. Wilderness Values

Wilderness designation of the southern third of the WSA would provide the area's wilderness values with significant long-term Congressional protection. This would protect the portion of the WSA with the highest concentration of wilderness values.

e. Other Resources

Impacts to water, soils, vegetation (including the rare plant Sophora gypsophila var. guadalupensis), wildlife, and cultural resources would be the same as those described under the All Wilderness Alternative. Only the acreage figures (12,277 acres under all wilderness and 19,109 acres under nonwilderness) would change.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the entire 31,386 acres of public land within the Brokeoff Mountains WSA would be recommended unsuitable for wilderness designation.

If the area is not designated wilderness, it is assumed that for all activities, except minerals management, practices would continue at current levels. Before surface disturbing activities are approved, an EA would be prepared to determine site-specific impacts.

Due to the area's theoretically favorable oil and gas potential, it is anticipated that oil and gas exploration would occur. Geophysical exploration would be subject to site-specific environmental review. Exploratory drilling could also occur and reclamation of disturbed areas would be performed to the specifications placed on the Application for Permit to Drill.

Under this alternative, there are potentially significant impacts to wilderness values. The impacts on air and education/research were clearly insignificant; therefore, they were not included in the following discussion.

1. Impacts to Wilderness Values

The natural appearance of the Brokeoff Mountains WSA could be significantly impaired by surface disturbance and installation of facilities normally associated with oil and gas exploration. Any opportunity for the area to retain its primeval character and influence could be lost. Opportunities for solitude and primitive and unconfined types of recreation also would be impaired by the presence of motorized equipment and oil and gas crews.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Geophysical exploration off existing roads could produce minor impacts on all range sites. Existing vegetation could be trampled and broken, and soils could be compacted slightly. Long-term impacts associated with exploration would be insignificant, provided routes are not bladed and abandoned.

The removal of vegetation and accompanying soil disturbance associated with construction of drill sites, access roads, and facilities would be a minor impact on existing and potential productivity of all range sites, and create a minor increase in wind and water erosion potential.

Surface disturbance to the habitat of the Sophora gypsophilia var. guadalupensis could have detrimental effects on this plants' status. If it is eventually classified as threatened or endangered, no disturbance of the plant or its habitat would be permitted regardless of the WSA's final designation.

b. Wildlife

Cumulative impacts of oil and gas activities in the Brokeoff Mountains WSA could impact wildlife and their habitat. Vehicular traffic, drilling operations, and other associated activities could cause displacement and harassment of wildlife. Associated surface disturbing activities could remove vegetation (which currently provides cover and food) and disturb wildlife in the general vicinity associated with increased human use (e.g., poaching, off-road vehicle use, indiscriminate shooting).

Seismic exploration and drilling activity could impact mule deer and bird (particularly raptors) populations if such disturbances occur during fawning or the nesting season.

A benefit would be the use of abandoned wells as a water source for wildlife. Reclamation of abandoned drill pads and roads with grass, forb, and shrub species could increase plant and wildlife population diversity.

c. Visual

Oil and gas exploration probably could not satisfy the standards required by a Class II area. Therefore, the area would probably be reclassified as a less stringent class, thereby allowing for greater modification of the landscape and degradation of its scenic quality. Visual resources could be degraded in the long-term.

d. Cultural

Because the inventory data for the WSA is almost nonexistent, critical areas might exist which have not been identified in this report. Surveys would be required before any new surface disturbing activities take place, and all sites which are located are protected through compliance with Section 106 of the National Historic Preservation Act of 1966. This would lessen the impacts of proceeding with oil and gas activities with a very limited inventory base.

e. Minerals

Drilling exploration and development could occur on all leases subject to site-specific environmental review. There would be no impact to energy minerals.

f. Livestock Grazing

Oil and gas exploration could have a variety of impacts on grazing operations. Construction activities, increased traffic on an allotment, and a change in normal grazing patterns around well sites could interfere with ranch operations. Assuming an average stocking rate of 72 AUMs per section, for every nine acres of existing vegetation permanently lost to drilling sites, access roads, and associated facilities, one AUM of forage would be unavailable for use by livestock.

Construction of a road to a previously inaccessible area or establishment of a new water source after a well is abandoned could benefit livestock grazing by opening up new territory which was previously too far from water.

g. Recreation

Construction of additional roads into the Brokeoff Mountains WSA could benefit activities dependent on motorized access. On the other hand, significant amounts of surface disturbance could disrupt hunting opportunities.

GLOSSARY

GLOSSARY

ADIT. A nearly horizontal entrance to a mine.

AGGREGATE. A mineral material such as sand, gravel, shells, or broken stone.

ALLOTMENT. An area of land designated and managed for grazing of livestock.

ALLOTMENT MANAGEMENT PLAN (AMP). A documented program which applies to rangeland operations on public land, which is prepared in consultation with the permittee(s) or lessee(s) involved, and which: (1) prescribes the manner in and extent to which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic, and other needs and objectives as determined for public land through land use planning; (2) describes the type, location, ownership, and general specifications for the rangeland developments to be installed and maintained on public land to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock grazing and other objectives as may be prescribed by the authorized officer consistent with applicable law.

ALLUVIAL. Pertaining to material that is transported and deposited by running water.

ALLUVIAL CONE. An alluvial fan with steep slopes.

ALLUVIUM. Material, including clay, silt, sand, gravel, or similar unconsolidated sediments, deposited by a stream or other body of running water.

ANDESITE. A volcanic rock composed essentially of andesine and one or more mafic constituents. The mafic constituents may be pyroxene, hornblende, or biotite.

ANIMAL UNIT (AU). Considered to be one mature cow (1,000 pounds) or its equivalent based upon average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM). The amount of forage required by an animal unit for one month.

ANTICLINE. An upfold of stratified rock in which the beds bend downward in opposite directions from the crest.

ARCHAIC. That period of human adaptation following the late Pleistocene Paleo-Indian people and prior to the development of sedentary agricultural groups in the Southwest.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public land where special management attention is needed to protect and prevent irreparable damage to important historical, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

ARKOSE. A sandstone containing 25 percent or more of feldspars, usually derived from silicic igneous rocks.

ASPECT SPECIES. A vegetative species that appears to be dominant in the landscape, although it may be only a small percent of the total vegetative composition.

AVIFAUNA. All birds of a given region.

BASALT. A dark to medium-dark colored, commonly extrusive, mafic igneous rock.

BASIN AND RANGE PHYSIOGRAPHIC PROVINCE. A province in the southwestern United States characterized by a series of tilted fault blocks forming longitudinal ridges or mountains and broad intervening basins.

BATHOLITH. A great mass of intruded igneous rock that extends downward to unknown depth.

BOLSON. A flat-floored desert valley that drains toward a playa or central depression.

BUREAU SENSITIVE. Fish, wildlife, and plants which are candidates for Federal listing or species proposed for Federal listing automatically become Bureau Sensitive species.

CALDERA. A large basin-shaped volcanic depression the diameter of which is much greater than the vent.

CALICHE. A layer in the soil more or less cemented by calcium carbonates (CaCO_3), commonly found in arid and semiarid regions.

CARBONACEOUS. 1. Coaly. 2. Pertaining to, or composed largely of, carbon. 3. The carbonaceous sediments include original organic tissues and subsequently produced derivatives of which the composition is chemically organized.

CAULDRON. An inclusive term for all volcanic subsidence structures regardless of shape or size, depth of erosion, or connection with the surface.

CHERRY-STEMMED. An unofficial term used to describe the way a wilderness inventory unit boundary is drawn to exclude a road that enters the unit; the resulting boundary resembles a cherry-stem.

CLOSED BASIN. A basin is considered closed with respect to surface flow if its topography prevents the occurrence of visible outflow. It is closed hydrologically if neither surface nor underground outflow can occur.

CONFORMABLE. 1. Strata or groups of strata lying one above another in parallel order are said to be conformable. 2. When beds or strata lie upon one another in unbroken and parallel order, and this arrangement shows that no disturbance or denudation has taken place at the locality while their deposition was going on, they are said to be conformable.

CONGLOMERATES. Clastic sedimentary rock composed of rounded fragments varying from small pebbles to large boulders in a cement of calcareous material such as iron oxide, silica, or hardened clay.

CONTIGUOUS LANDS. As it pertains to wilderness, lands or legal subdivisions having a common boundary. Lands having only a common corner are not contiguous.

COPPICE DUNES. Sand dunes stabilized around shrubs.

CRITICAL MINERALS. Those minerals that are critical to the economy and security of the United States and for which we are now dependent on foreign sources. These minerals are listed in the National Defense Stockpile Inventory of Strategic and Critical Materials.

CUESTAS. A hill or ridge with a steep face on one side and a gentle slope on the other.

CULTURAL RESOURCE INVENTORY CLASSES.

Class I - Existing Data Inventory: an inventory study of a defined area designed to provide a narrative overview (cultural resource overview) derived from existing cultural resource information and to provide a compilation of existing cultural resource site record data on which to base the development of the BLM's site record system.

Class II - Sampling Field Inventory: a sample-oriented field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a portion of a defined area in a manner which will allow an objective estimate of the nature and distribution of cultural resources in the entire defined area. The Class II inventory is a tool utilized in management and planning activities as an accurate predictor of cultural resources in the area of consideration. The primary area of consideration for the implementation of a Class II inventory is a planning unit. The secondary area is a specific project in which an intensive field inventory (Class III) is not practical or necessary.

Class III - Intensive Field Inventory: an intensive field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a specified area. Normally, upon completion of such inventories in an area, no further cultural resource inventory work is needed. A Class III inventory is appropriate on small project areas, all areas to be disturbed, and primary cultural resource areas.

DEFORMATION. Any change in the original form or volume of rock masses produced by tectonic forces. Folding, faulting, and solid flow are common modes of deformation.

DIKE. A tabular body of igneous rock that cuts across the structure of adjacent rocks or cuts massive rocks.

DIRT TANK. Usually a permanent earthen structure for holding water temporarily. These are built in high rainfall runoff areas such as an arroyo, canyon, or swale area.

DRAINAGE BASIN. A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded water.

ECOSYSTEM. An interacting natural system including all the component organisms together with its nonliving environment; a community together with its environment; an ecological system.

ECOTONE. A transition area between plant communities which has some of the characteristics of each.

EMBAYMENT. Term describing a continental border area that has sagged concurrently with deposition so that an unusually thick section of sediment results. An embayment is similar to a basin of sedimentation of a geosyncline, and some embayments may be one flank of a larger subsiding feature.

ENDANGERED SPECIES.

Federally Listed: Any species of animal or plant in danger of extinction throughout all or a significant portion of its range.

State (Group I): Species whose prospect of survival or recruitment in the State are in jeopardy in the foreseeable future.

State (Group II): Species whose prospect of survival or recruitment within the State may become jeopardized in the foreseeable future.

EPHEMERAL STREAMS. A stream or portion of a stream which flows only in direct response to precipitation. Such flow is usually of short duration.

EROSION CONTROL STRUCTURES. Usually one large earthen, rock, wire, or cement structure used to hold large concentrated flows of water and release this water in small non-eroding amounts.

EXTENSION AREA. A test range in excess of that provided by the main White Sands Missile Range (WSMR) required for an indefinite period of time to support future military programs.

EXTRUSIVE ROCK. Rocks derived from magma poured out or ejected at the earth's surface.

FAULT. A fracture in the earth's crust along which there has been displacement of one side with respect to the other.

FAULT BLOCK. A block of the earth's crust bounded on at least two opposite sides by faults; it may be elevated or depressed relatively to the adjoining region.

FAULT SCARP. A cliff formed by a fault, usually modified by erosion unless the fault is very recent.

FISSURE. 1. An extensive crack, break, or fracture in the rocks. A mere joint or crack persisting only for a few inches or a few feet is not usually termed a fissure by geologists or miners, although in a strict physical sense, it is one. 2. Where there are well-defined boundaries, very slight evidence of ore within such boundaries is sufficient to prove the existence of a lode. Such boundaries constitute the sides of a fissure.

FLPMA. Federal Land Policy and Management Act of 1976, which mandated the BLM Wilderness Review. Often referred to and pronounced "FLIPMA".

FOLD, FLEXURE. A type of fold, in size microscopic to orogenic, in which movement took place normal to the axial line and parallel with the limbs, producing notable shortening.

FORMATION. The primary unit of formal mapping or description. Most formations possess certain distinctive or combinations of distinctive lithic features. Boundaries are not based on time criteria. Formations may be combined into groups or subdivided into members.

GANGUE. The nonvaluable minerals in ore.

GEOPHYSICAL EXPLORATION. The use of geophysical instruments and methods to determine subsurface conditions by analysis of such properties as specific gravity, electrical conductivity, or magnetic susceptibility. This usually has an economic objective, e.g. discovery of fuel or mineral deposits.

GEOOTHERMOMETRY. Measurement and study of the earth's heat, usually measured through shallow temperature gradient holes less than 500 feet.

GRABEN. A block generally long compared to its width that has been down thrown along faults relative to the rocks on either side.

GRANDFATHERED. Section 603(c) of the Federal Land Policy and Management Act (FLPMA) directs the BLM to manage lands under wilderness review "so as not to impair the suitability of such areas for preservation as wilderness..." However, Section 603(c) also provides a special exception to the "nonimpairment" criteria. Mining, grazing, and mineral leasing uses existing on the date of approval of FLPMA (October 21, 1976) may continue in the same manner and degree as on that date even if these uses impair wilderness values. Such uses are "grandfathered."

HALF-SHRUB. A perennial plant with a woody base whose annually produced stems die back each year.

HEAT FLOW. Dissipation of heat coming from within the earth by conduction or radiation at the surface.

HORST. A block of the earth's crust separated by faults from adjacent blocks that have been relatively depressed.

HYDROCARBONS. Any organic compound, gaseous liquid, or solid, consisting solely of carbon and hydrogen, such as crude oil.

HYDROTHERMAL. Relating to hot water in the formation of minerals by the action of hot solutions rising up through the earth's crust from a cooling magma.

IGNEOUS ROCKS. Rocks formed by solidification of magma.

INHOLDING. Private or State owned land inside the boundary of a wilderness study area but excluded from the wilderness study area.

INITIAL INVENTORY. The first step in the BLM Wilderness Review Process. Inventory units or roadless areas which are obviously unsuitable for wilderness are separated from those which warrant intensive inventory for wilderness characteristics.

INSTANT STUDY AREAS. Section 603 of the Federal Land Policy and Management Act mandated that all primitive or natural areas formally identified prior to November 1, 1975, will be studied for wilderness suitability and recommended to the President by July 1, 1980. There are three such areas in New Mexico.

INTENSIVE INVENTORY. The second major step in the BLM Wilderness Review Process. Roadless areas are carefully inventoried for wilderness characteristics. The result of the intensive inventory is the identification of wilderness study areas.

INTERIOR BOARD OF LAND APPEALS (IBLA). The IBLA, as a component of the Department of the Interior Office of Hearings and Appeals, is an authorized representative of the Secretary. The purpose of the IBLA is to hear, consider, and determine as fully and finally as might the Secretary, matters within the jurisdiction of the Department involving appeals from decisions rendered by Departmental officials relating to (1) the use and disposition of public lands and their resources and (2) the use and disposition of mineral resources in certain acquired lands of the United States. Special procedures for appeals are contained in 43 Code of Federal Regulations, Part 4, Subpart E.

INTERIOR FENCE. Fences used to divide allotments into pastures or holding areas.

INTRUSION. A feature (landform, vegetation, or structure) which is generally considered out of context because of excessive contrast and disharmony with characteristic landscape.

INTRUSIVE ROCK. A rock that consolidated from magma beneath the surface of the earth.

INVENTORY UNIT. Areas or islands of public land indexed for easy reference at the start of the wilderness inventory. These units may or may not be roadless. A roadless determination requires more detailed field work.

LIFE ZONES. Any series of biogeographic zones into which a continent, region, etc., is divided by latitude and altitude on the basis of the characteristic animal and plant life in a zone.

LITHIC. A stone or rock exhibiting modification by humans. It generally applies to projectile points, scrapers, and chips rather than ground stone.

MAGMA. Naturally occurring mobile rock material generated within the earth and capable of intrusion and extrusion from which igneous rocks are thought to have been derived through solidification and related processes.

MAGNETIC PROSPECTING/GRAVITY SURVEYS. A technique of applied geophysics; a survey using a magnetometer or a gravity meter on the ground or from the air to measure variations in magnetic or gravitational intensity.

MALPAIS. Rough country composed of dark basaltic lava.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes for a given planning area land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each class of land use or protection. A MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decisionmaking.

METAMORPHIC ROCKS. Rocks formed in the solid state in response to changes of temperature, pressure, and chemical environment.

METAMORPHISM. Process by which consolidated rocks are altered in composition, texture, or internal structure by conditions and forces not resulting simply from burial and the weight of subsequently accumulated overburden.

METAVOLCANICS. Partly metamorphosed volcanic rocks.

MINERALIZATION. The process of converting or being converted into a mineral, as a metal into an oxide, sulfide, etc.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

OVERSTORY. The upper canopy(s) of plants.

PALEOENVIRONMENTAL STUDIES. Studies using fossilized pollen and other geological and biological remains to determine past climatic conditions.

PALEO-INDIAN. Cultural remains of human groups which co-existed with Pleistocene megafauna in North America, dating from 15,000 B.C. to approximately 7000 B.C.

PARTHENOGENIC. Unisexual reproduction where offspring are produced from unfertilized eggs.

PEDIMENT. A broad gentle sloping bedrock surface that is situated at the foot of a much steeper mountain slope in an an arid or semiarid region.

PERENNIAL STREAM. A stream or portion of a stream which flows continuously.

PERIPHERAL SPECIES. Species whose normal range is in adjoining states or Mexico and which are at the edge of their range in New Mexico.

PETROGLYPH. A form of rock art manufactured by incising, scratching, or pecking designs into rock surfaces.

PLACER. A place where gold is obtained by washing; an alluvial or glacial deposit, as of sand or gravel, containing particles of gold or other valuable minerals.

PLATFORM. The area of thinner sediments adjoining a geosynclinal wedge of thicker equivalent beds or a basin of thicker equivalent sediments.

PLAYA. The usually dry and nearly level lake plain that occupies the lowest part of a closed depression.

PLUGS. Volcanic necks consisting of a mass of solidified igneous rock.

PLUTON. In the strictest sense, a body of igneous rock that has formed beneath the surface of the earth by consolidation from magma.

PROSPECT HOLE. Any shift, pit, drift, drill hole, or ditch made for the purpose of prospecting the mineral-bearing ground.

PROVINCE. A large area or region unified in some way and considered as a whole.

PSEUDORIPARIAN AREAS. Intermittent drainages (arroyos) supporting a more varied vegetation composition than the surrounding upland areas.

PSILOMELANE. An ore of manganese.

PUBLIC LAND. Any land and interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except:

-- lands located on the Outer Continental Shelf

-- lands held for the benefit of Indians, Aleuts, and Eskimos

-- lands in which the United States retains the minerals, but surface is private.

PUMICE. An excessively cellular, glassy lava, generally composed of rhyolite.

PYROLUSITE. The principal ore of manganese.

PYROXENE. A group of dark, rock-forming silicate minerals.

RANGE SITE. Is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production.

RANGELAND DEVELOPMENT. Any facility or structure relating to rangelands which is designed to control patterns of use, provide water, and stabilize soil and water conditions.

RAPTOR. Any predatory bird such as a falcon, hawk, eagle, or owl that has feet with sharp talons or claws adapted for seizing prey and a hooked beak for tearing flesh.

RARE II. The wilderness inventory on lands administered by the Secretary of Agriculture through the United States Forest Service. The acronym stands for Roadless Area Review and Evaluation, and the "II" signifies that it is the second time the Forest Service has inventoried and evaluated the lands it administers.

RED BEDS. Term applied to red sedimentary rocks which usually are sandstones and shales, although in exceptional cases red limestones have been reported.

RHYOLITE. The extrusive equivalent of granite.

RIFT. A rift or rift zone usually refers to a system of fractures (faults) in the earth's crust and the associated valley or depression.

RIGHT-OF-WAY. An easement or permit which authorizes public land to be used for a specified purpose that generally requires a long narrow strip of land. Examples are roads, powerlines, pipelines, etc.

RIPARIAN VEGETATION. Vegetation which occurs in or adjacent to essentially perennial drainage ways or their floodplains.

ROAD. For the purpose of the BLM's wilderness inventory, the following definition has been adopted from the legislative history of the Federal Land Policy and Management Act:

"The word 'roadless' refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road."

To clarify this definition, the following subdefinitions also apply:

"Improved and maintained" - Actions taken physically by man to keep a road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.

"Mechanical means" - Use of hand or power machinery or tools.

"Relatively regular and continuous use" - Vehicular use which has occurred and will continue to occur on a relatively regular basis. Examples are: access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

ROADLESS. Refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road.

ROADLESS AREA. That area which is roadless, as defined above, and is bounded by a road, the edge of a right-of-way, other land ownership, or a significant imprint of man.

SEDIMENTARY ROCKS. Rocks formed by the accumulation of sediment.

SHEAR ZONE. A geologic zone in which shearing has occurred on a large scale so that the rock is crushed and brecciated.

SILICEOUS. Of or pertaining to silica; containing silica, or partaking of its nature. Containing abundant quartz.

SILL. A tabular igneous intrusion that parallels the planar structure of the surrounding rock.

SPECIAL CONCERN ELEMENT. Plant species considered rare or endangered by the New Mexico State Heritage Program, but not legislatively protected.

SPLIT ESTATE. Refers to the situation where the subsurface mineral estate is owned or controlled by a party other than the owner of the surface of the same land area.

SOLITUDE. Outstanding opportunities for solitude or primitive and unconfined recreation are wilderness characteristics examined in the intensive wilderness inventory. Factors contributing to opportunities for solitude are vegetative screening, topographic relief, vistas, and physiographic variety. 1. The state of being alone or remote from habitations; isolation. 2. A lonely, unfrequented, or secluded place.

STANDARD HABITAT SITE. A grouping of habitat sites based on similarity of vegetation and local landform.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A metropolitan area that has a large population nucleus together with adjacent communities which have a high degree of economic and social integration with that nucleus. Each SMSA has one or more central counties containing the area's main population concentration; an urbanized area with at least 50,000 inhabitants.

STEPPE. Arid land usually characterized as being level and without forests; usually in large tracts and in regions of extreme temperature range and loose soil.

STORAGE TANK. A permanent water holding structure used to supply water to troughs, pipelines, etc.

STRATIFORM. Composed of layers.

STRINGER. A narrow vein or irregular filament of mineral occurring in a rock.

SULFIDE. A compound of sulfur with one other more positive element or radical.

SUPERGENE. Applied to ores or ore minerals that have been formed by generally descending water. Ores or minerals formed by downward enrichment.

SUPPLEMENTAL VALUES. Features of ecological, geological, or other scientific, educational, scenic, or historical value that may be present in an inventory unit. These are not necessary criteria for wilderness suitability, as is stated in the Wilderness Act of 1964, but must be assessed during the intensive wilderness inventory.

SUSTAINED YIELD. Management of a biological resource (as timber) such that the portion removed by one harvest is replaced by growth or reproduction before another harvest occurs.

SYENITE. An igneous rock composed primarily of alkali feldspar together with other minerals, such as hornblende.

SYNCLINE. A trough of stratified rock in which the beds dip toward each other from either side.

TECTONIC. Relating to the deformation of the earth's crust.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.

TRAVERTINE. Calcium carbonate deposits commonly associated with hot springs.

TROUGH. An elongate and wide depression with gently sloping borders.

TUFF. A compacted deposit of volcanic ash and dust that may contain sand and clay.

UNALLOTTED FEDERAL LAND. Federal land which currently is not committed to livestock grazing use.

UNCONFORMABLE. Having the relation of unconformity to the underlying rocks; not succeeding the underlying strata in immediate order of age and in parallel position.

UNDERSTORY. The plants growing beneath the canopy of other plants.

UPLIFT. Elevation of any extensive part of the earth's surface relative to some other parts.

VEHICLE TRAIL. A two-wheel track created only by the passage of vehicles.
A trail is not a road.

VESICULAR BASALT. Basalt with abundant vesicles formed as a result of the expansion of gases during the fluid stage of lava.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. VRM Classes are based on relative visual ratings of inventoried lands. Each class describes the different degree of modification allowed to the basic elements of the landscape. The following are the minimum management objectives for each class.

Class I - Natural ecological changes and very limited management activity are allowed. Any contrast created within the characteristic landscape must not attract attention. This classification is applied to Visual Areas of Critical Environmental Concern, wilderness areas, wild and scenic rivers, and other similar situations.

Class II - Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the landscape. A contrast may be seen but should not attract attention.

Class III - Contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate in the existing landscape.

Class IV - Contrasts may attract attention and be a dominant feature in the landscape in terms of scale. However, the changes should repeat the basic elements of the landscape.

WATER SPREADER. Usually several small, earthen, rock structures used to slow the water flow and give the runoff a chance to be absorbed by the soils and plants.

WILDERNESS. The definition contained in Section 2(c) of the Wilderness Act of 1964 is as follows: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features or scientific, educational, scenic, or historical value.

WILDERNESS AREA. An area formally designated by Congress as part of the National Wilderness Preservation System.

WILDERNESS CHARACTERISTICS. Those characteristics of wilderness as described in Section 2(c) of the Wilderness Act. These include size, naturalness, solitude, primitive and unconfined type of recreation, and supplemental values.

WILDERNESS INVENTORY. An evaluation of the public land in the form of a written description and a map showing those lands that meet the wilderness criteria as established under Section 603(a) of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act. The lands meeting the criteria will be referred to as Wilderness Study Areas (WSAs). Those lands identified as not meeting wilderness criteria will be released from further wilderness consideration.

WILDERNESS REVIEW. The term used to cover the entire wilderness inventory, study, and reporting phases of the wilderness program of the BLM.

WILDERNESS STUDY. The process of analyzing and planning wilderness preservation opportunities along with other resource opportunities within the BLM's planning system.

WITHDRAWAL. An action that restricts the use of public land and segregates the land from some or all of the public land or mineral laws.

ZEOLITES. A large group of minerals that are characterized by their easy and reversible loss of water. They are used in the base exchange method of water softening and as gas absorbents or drying agents (filters).

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